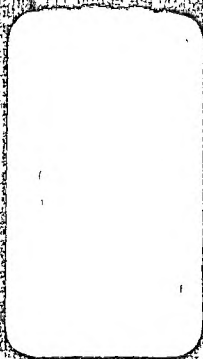


Principles of the Grain Trade
of
Western Canada

C. B. PIPER



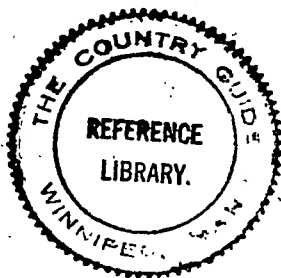
PRINCIPLES OF THE GRAIN TRADE

OF WESTERN CANADA

BY

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PREFACE

This brief sketch consists of the notes of a series of special lectures delivered to the students of the Manitoba Agricultural College. Since the object of publishing the matter in book form is to distribute the same information more widely it was decided to adhere to this form as best adapted to the purpose.

Because it is only lecture notes, it contains many current references of only passing accuracy which were used to bring out the points discussed. As the lectures are repeated these figures and references will be revised. Although many of them may shortly become out of date when printed, in view of the fact that they are used primarily to illustrate the various principles, it is believed that for this purpose they will lose little of their value.

Then, too, trade methods are continually changing so that much of the descriptive matter may soon become inaccurate. However, this little book is presented in the hope that it will explain the fundamental principles underlying the trade which are well established and thus fairly permanent.

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INTRODUCTION

The grain trade of Western Canada is fundamental in our economic structure. It has to do with exchanging our farmers' grain for money with which they may purchase necessities of life. As we are essentially a grain-growing country, the business of moving our grain vitally affects our prosperity. Promptness and economy are of the highest value. The organization and methods used must be of the best. To perform its functions properly, it must be based upon sound principles. It is to briefly examine these principles and to see how they are applied in practice that this treatise is presented.

The business of handling our grain has now reached the stage of being practically an exact science. The markets are world-wide and well established. Their fundamentals are well understood. Western Canada has the benefit of these markets brought within its boundaries. A complete commercial structure has been reared at an investment of approximately \$50,000,000. The application of established principles to conditions in the country through the elevator system and direct buying from the producers has been proved out by experience. There are no secrets or mysteries anywhere. Although the business may seem somewhat intricate and complicated, it is only because of its vast size and the highly developed methods of marketing. A brief study,

however, will show that the entire structure is composed of quite simple parts and that each part may be easily and fully understood.

The author is a grain merchant of several years' experience in both the country and terminal elevator business, therefore he naturally looks upon the problems from that viewpoint. Nevertheless, the business is so comprehensive and has required so much study of fundamentals that a broad conception of the true relation of the trade with the prosperity of the country is an inevitable result. This conception inspires this survey of the practice and theory of the business. The entire matter is presented in a simple descriptive or narrative manner, setting forth truthfully the various conditions and how they are met. No argument is used or intended. Detail and exhaustiveness are sacrificed to brevity throughout. Wherever facts and figures have been departed from, the conclusions are not casual opinions but are the results of commercial experience. Although there may be some differences in the practical application of the various principles of the business, every phase as treated is typical within the trade.

The entire subject is divided into chapters according to the general functions performed. All of these elements are parts of the whole and each is dependent upon the others in practice.

Canada's position as a grain-growing country is first touched upon. This is to show the necessity for and general conditions surrounding the grain trade.

A natural starting point in the study of methods is transportation, both by rail and by water, as this has to do with the physical carriage of the grain itself. Inspection is considered next because it is fundamental and in practice is performed in conjunction with transportation. The elevator system, both country and terminal, is really a system of warehousing incidental and necessary to transportation, but because of its importance, each kind is treated separately. All of this has to do with getting the grain to a terminal point and determining its quality. It is only when this is done that it can have commercial value. We can only then take up the marketing on the Grain Exchange and the financing of the crop movement.

Since much of the machinery of the trade is governed by an Act of the Dominion Parliament, there follows a brief description of its provisions and administrations.

A brief chapter then shows the relation of the grain trade to the prosperity of the farmer.

Valuable assistance in preparation was extended by business associates and friends, including members of the Board of Grain Commissioners for Canada.

C. B. PIPER.

Winnipeg, Man.
March, 1915.

CHAPTER I.

CANADA'S POSITION AS A GRAIN PRODUCING COUNTRY

Law of exchange—Nothing in this world can have value unless somebody else wants it and is able to get it. Nobody can have anything to sell unless he has more than he can use himself or unless he is willing to deprive himself of its use in order to exchange it for something else which he considers more valuable. This crudely expresses the law of exchange which is fundamental in the science of political economy or the wealth of nations, because it is only this same simple law adapted to national resources which determines the aggregate wealth of any community or state.

This law applies to every commodity under the sun. It makes no difference whether it is wheat, clothing, lumber, coal, horses or even gold itself. In every case the man who produces or possesses any of these things will first of all satisfy his own necessity or desire. If by so doing he exhausts his supply, he will have no surplus to exchange. If, however, he finds himself with more than he requires, he is then in a position to trade this surplus with somebody else who needs it and has something to give in exchange. It is clear that no matter how much surplus he may have, if he cannot find somebody else who wants it, or can find no means of getting it delivered as wanted, he cannot effect any exchange. His

surplus will be left on his hands and, as he has already satisfied his own requirements, it will have no value.

Exchange applied to wheat—Apply this idea to wheat. Its value is for human food. The farmer who grows it produces more than he requires for himself and family. As much as he needs for his own use is valuable to him as it provides the first requisite for existence. What he does not require is only valuable to him if he can find somebody else who wants it and he is able to make physical delivery of the grain. This requires a purchaser and the necessary machinery of commerce to transport the grain to the buyer and the money or goods received in exchange back to the farmer. Unless both the purchaser and the necessary machinery are present any surplus wheat is useless and cannot produce any wealth.

This was very well illustrated in the early history of Western Canada, when Lord Selkirk brought his colony of immigrants from England into the Red River Valley of Manitoba by way of the Hudson's Bay and Lake Winnipeg. Lord Selkirk knew that wheat could be raised in this district. He knew it had a staple value in England. He sent out his colonists upon the belief that they would become prosperous through the growing of wheat. He sent out seed with them. This was planted, and even with their crude methods of cultivation they grew such large quantities that they had much more than they could use for themselves. Lord Selkirk then found that he had provided no purchaser or means of transportation, and all of the surplus wheat

was worthless. It did them no good to store it as there could be no useful disposition. The immediate result was failure for the colony, and instead of developing into a prosperous agricultural community, they were forced to the level of mere existence. They eventually moved away to other localities and ceased to have any community life. Although there were some other factors contributing to this failure, the useless growing of wheat was the principal one.

Necessity of consumer to Canada's prosperity—
The question of the consumer or purchaser is today the most important factor in Canada's prosperity. Probably for all time to come Canada will be essentially an agricultural country. This is due principally to its climate, which is particularly favorable to the growing of hard wheat. It is already largely engaged in agricultural pursuit. In short, agriculture is our principal natural resource. Canada must therefore look closely to its outlet for wheat, which is its most valuable farm product.

*Most of our wheat is consumed abroad—*The Department of Trade and Commerce estimated that in the year 1913 the total production of wheat of both Eastern and Western Canada was 231,000,000 bushels. Of this amount about 37,000,000 bushels was probably consumed by our own people in the form of flour, and about 22,000,000 was used for seed. This total of 59,000,000 bushels, deducted from the total production of 231,000,000 bushels, leaves a balance of 172,000,000, which constituted our surplus and

which had to find an outside market in order to have value and bring wealth to the country. On the proportion given, only about one-quarter of the production was consumed in our country, and a market had to be found for the other three-quarters. As only 22,000,000 bushels were raised in the eastern provinces and 209,000,000 bushels in the western provinces, the problem is of much greater importance to the West. Although the Government figures for total production are always too large, nevertheless they clearly show the complete dependence of the western farmers upon the outside consumer.

Magnitude of the trade—The problem is worldwide. It is obvious that if Canada cannot consume the wheat that she grows, she must find some other nation which does not grow enough wheat and which requires and is willing to buy Canada's surplus. As it is generally figured that the average consumption of wheat-using nations is one barrel of flour per year per inhabitant or about four and one-half bushels of wheat, the exportable surplus of 1913 would feed for one year a nation of many million people. This shows the magnitude of the problem to find all of these people to feed and the magnitude of the business to transport all of this wheat to them and to bring back money or goods received in exchange and which are needed at home by the farmers who grew the wheat.

British Isles the world's largest consumer—Where does Canada dispose of her wheat? Principally to the British Isles or the United Kingdom. The

United Kingdom is the largest wheat-importing country in the world. Its principal food is bread made of wheat. Its population is so dense and its production is so small per inhabitant that in order to feed its people it has to import more wheat than any other country. Other countries whose total food shortage may be as great as that of the United Kingdom substitute other things for wheat and feed the great bulk of their people upon rye or rice.

British Isles Canada's largest consumer—Most of our exports go to the British Isles, but in addition exports of considerable size go into the United States, Belgium and Holland. To show the relative consumption of these various markets for our wheat, it will suffice to set out the following exports in round figures for the year 1913, as reported by the Department of Trade and Commerce:

British Isles	77,000,000	bushels
United States	10,000,000	"
Belgium	3,000,000	"
Holland	1,000,000	"
	<u>91,000,000</u>	bushels

The total exported was 93,000,000 bushels. This leaves a balance of 2,000,000 bushels divided among ten other countries. It is apparent that Great Britain is by far the largest customer for Canadian wheat.

Canadian wheat has no tariff protection in British Isles—The British Isles have little or no protective tariff on imports. There is no duty whatsoever on wheat. There is thus no chance for any favor to be shown wheat produced in

Canada as part of the British Empire. What, then, is the true position of the Canadian wheat on the English market?

Supply and demand in British Isles—It is characteristic of commerce that supply and demand generally control the movements of all commodities. The only reason any wheat goes to the English market is because there is a strong demand for it. It is reasonable to presume that there must be other sources of supply, as we know there are other grain-producing countries which are probably in the same position as Canada in that they must find suitable buyers for their surpluses. It is reasonable to presume that the English buyer will receive grain from anybody who wishes to send it to him. The more grain coming onto the market the easier can the purchaser make his bargains.

Let us look for a moment to other exporting countries. In the Grain Statistics of the Department of Trade and Commerce for Canada covering the crop year ended August 31, 1913, appear shipments from the principal exporting countries of the world for the last available twelve months. In round figures they are as follows:

Argentine Republic	96,000,000 bushels
Russia	96,000,000 "
Canada	93,000,000 "
United States	91,000,000 "
British India	62,000,000 "
Roumania	53,000,000 "
Australia	32,000,000 "
Germany	10,000,000 "
Bulgaria	8,000,000 "

Because of the large volume offered by the wheat-exporting countries, the British Isles draw indiscriminately from all of them wherever price and quality suit. It has already been shown that most of Canada's surplus goes to the British Isles. It is therefore evident that Canada must sell her wheat in competition with all of the other exporting countries of the world. In the year 1913 the British Isles imported about 204,000,000 bushels.

That is the year in which Canada exported to them about 77,000,000 bushels. Thus our country furnished about one-third of their requirements against two-thirds furnished by others. As all the other importing countries have the same opportunity as the British Isles to draw from all grain-exporting countries, similar competitive conditions will apply to the sale of Canadian wheat upon whatever market it is disposed.

Value of Canadian crop dependent on world's production—Excepting as reflected through the world's production, it is apparent that the size or quality of the Canadian crop does not determine the price received in Canada for our wheat. Our production for the last crop year (1913-14) was one of the largest in our history. At the same time the price received was relatively low, not due to the size of our crop but because the world's production was unusually large. In the present crop year (1914-15) the production is smaller than for several years. And wheat is worth a great deal more than it was last year. But again, price is determined by world-wide conditions, being greatly influenced by the disturbing factor of the European

war. But before there were any indications of war, it was the opinion of close students of the grain situation that prices this year would be comparatively high because all of the exporting countries, with the exception of the United States, grew smaller crops than usual, resulting in a world's shortage. Some countries, which normally have surpluses to export, will have to import wheat to meet their domestic requirements. The United States Department of Agriculture estimated that the total shortage amounts to 380,000,000 bushels. This in itself is sufficient to materially raise the price of wheat all over the world, which of course directly affects the price in Canada.

No matter how much wheat Canada will eventually raise, her principal market will always be for export and the price will therefore always be based upon foreign conditions. Thus, even when Canada leads the world in production the price she receives for her surplus must always be that based upon competition with exports from other countries. The factors now present will therefore always apply to our prices. That is to say, it will be the world's production and not the Canadian production which will determine the price for our farmers.

CHAPTER II.

TRANSPORTATION

Function of transportation—Transportation, by both rail and water, is the machinery of physically transferring grain from producer to consumer. Without some well organized system, no delivery of grain in quantity could be made and there could be little or no commerce. Without an efficient and economical system the cost would be prohibitive to both producer and consumer. Therefore transportation on commercially efficient and cheap lines is necessary to afford the farmer a remunerative outlet for his grain.

Ordering empty cars—When grain is ready to be shipped at a country station, either from an elevator or loading platform, the first step is to secure a car from the railway company. As in any other business, this is done by application to the local station agent. If there are empty cars on the station siding, these will be available. If there are no empties at hand, the station agent will transmit the request to his division superintendent. If the superintendent has empty cars available at some other place he will send them to the station ordering them. If there are no available cars on his division, it is necessary to send all the orders received from his various station agents to his general superintendent or other officer, who will make such arrangements as he can to put empty cars onto that division.

Car shortages—It is in this initial step that the greatest trouble in shipping and marketing our grain is found. This is due to the so-called car shortages, which are found almost every year on one or more of our railways. There are never any fewer cars during the grain shipping season than at other times of the year. In fact, as a rule, there are many more cars in Western Canada during the fall than any other season, because the railways anticipate the heavy movement of grain and begin to accumulate empty cars during the summer so that they will be available for the shipment of grain immediately after threshing. Then, too, our railways make it a point not to allow any of their cars to get off the western lines during the busy season. As soon as the grain is unloaded at the lake-front the cars are immediately returned to the country—empty, if there is no merchandise to fill them. Grain cars will make from five to seven trips during the season from September 1st to the close of navigation, the first week in December, but even such rapid service may be insufficient.

When there is a large crop and the weather is favorable, grain will be offered at country shipping points in greater quantities than the railways can carry it away. They do their best, but because the business is so much heavier than at other seasons of the year, their tracks and equipment have not the capacity to move it fast enough. Of course it would be absurd to expect them to increase their tracks and cars and locomotives

to such an extent that they could take care of all of this business before the close of navigation, for the simple reason that for the other nine months of the year a large part of their investment would be idle and freight rates would have to be heavily advanced to overcome the additional expense. From a transportation standpoint, it is cheaper for the country to put up with the delays due to this seasonal congestion than to pay the burden of carrying the large additional investment necessary to handle this business expeditiously during the short shipping season. Naturally the interests of the railways will prompt them to move the grain as rapidly as possible consistent with an investment which will not be a burden upon the community.

Billing cars—When a car is loaded with grain it is necessary to give the railway company instructions for shipment and to secure a receipt for its contents. This is all done with one document called a bulk grain bill of lading. This is written in duplicate, the original of which, when receipted by the railway company, becomes the commercial bill of lading. The duplicate is kept by the railway for instructions. On their faces both copies show shipping station, to whose order, to what station and terminal elevator the grain is shipped, who is to be advised of its inspection and its outturn on unloading, the kind of grain and the approximate quantity. At the bottom appear the signatures of both the shipper and the railway agent. On the back appear the conditions affecting the liabilities of the railway company as a common carrier.

Way-billing and advices—The duplicate of the bill of lading always stays at the station. The local station agent copies from it the instructions and other information onto a small sheet called a "way-bill." This is the document which goes forward with the car. It is picked up by the conductor of the freight train which pulls the car out of the station and is handed on from train to train as the car goes forward. When the car arrives at the terminal point a railway clerk copies the way-bill onto a report which is sent to the elevator to which the car is billed. Thus the elevator receiving the advice of the car's arrival not only never sees the original instructions written by the shipper but does not even see the way-bill. This shows that errors in advices of unloading at terminal elevators may occur because either the country station agent or the railway clerk at the terminal point makes errors or omissions in copying the instructions from the shipping bill or the way-bill respectively. In every case of such error either the railway or terminal elevator responsible therefor makes good any loss resulting to the shipper.

Seals—When a car is loaded the railway agent fastens all doors securely with car seals when he signs the bill of lading. This is to prevent theft during transit. When a sample is taken for inspection a seal must be broken and another one put on in its place, but this is done by a responsible Government official so there is no risk. Every seal is serially numbered and full records of the numbers and condition are made all along

the line, starting with the agent at the country station and ending with the terminal elevator where the car is unloaded. Thus if at any point seals are found in bad order it is comparatively easy to check back and find how and where the damage occurred. Since this comprehensive system was installed, thieving which had become a pest has been pretty well stamped out.

When seal records are taken, cars are also examined for leaks. If any car is found to be in bad order, it is reported and repaired at the first divisional point. Every train conductor also watches out for leaks in transit, which he reports for repairs. In this way losses in transit are reduced to a minimum.

Sampling for inspection — Somewhere during transit every car is sampled by Government officers for official inspection. This is always done at an important railway centre where the grain movement is sufficiently concentrated to make the work rapid and efficient. At present Winnipeg is the principal inspection point and Calgary a minor inspection point. As a rule grain arrives at these stations in solid train loads so that the sampling proceeds rapidly.

Arrival cars at terminal elevator — When cars arrive at a terminal point such as Fort William, they are sorted in the railway yard according to the elevators to which they are billed. At frequent intervals the railway switches them to the proper elevators. As soon as they are placed on the sidings they pass into the control of the elevators and the responsibility of the railway ceases.

diverted to Fort William, an extra three dollars will be charged by the railway company, but if the car is originally billed to a particular consignee at Fort William and is diverted on arrival to another consignee at Fort William, no extra charge is made.

The fourth charge is assessed whenever an unreasonable time is consumed in the loading or unloading of a car. The Grain Act says that twenty-four hours' free time shall be allowed for loading grain. If the car is not loaded within that period, thus necessitating delay, an extra charge is made at the rate of \$1.00 per day of twenty-four hours or part thereof after the expiration of the free time allowed. The same rule is in effect on the unloading of cars, but since delays at destination would cause very serious congestion, the railways therefore reserve the right to always set cars into any public terminal elevator which can unload them promptly whenever the public elevator to which cars are billed cannot receive them.

Inspection and weighing charges—The charge for inspection and weighing is collected through the railway. This covers inspection during transit and official weighing at destination. The Government bills the railway company with this service and the railway in turn adds the same charge to its expense bill.

Charges follow the grain—All charges assessed by the railway company, including freight, extras and inspection, are collected at destination. The

railway company collects from the terminal elevator receiving the grain and the elevator in turn collects from the shipper.

Shipment on Great Lakes—We have traced the transportation of grain from its loading at a country station up to the point where it is delivered for unloading at the terminal elevator. As we consider in a later chapter the handling of the grain in the terminal elevator, we will proceed at once to the transportation of the grain east after it has passed through the elevator and has been loaded and inspected into ships for shipment by water.

There is a large fleet of boats on the Great Lakes, which are especially built to carry grain or other commodities in bulk. They are simply shells with a little machinery in the rear end and necessary living quarters placed on deck. Because of the short distances between ports, they are required to carry very little coal and space which would be needed in longer trips for coal bunkers is used for cargo. Each ship is divided transversely by walls extending from the deck to the bottom, dividing the hull into sections or holds usually three or four in number. The deck entirely covers all of these holds, but is made with doorways or hatches along the centre, which give easy access to the space underneath. Each hold is just a big open pocket which can be filled up completely to the deck provided the commodity is not too heavy to tax the stability of the ship. For instance, with iron ore the bulk is so small compared to the weight that only about one-third

of the cubical capacity of the boats can be utilized. Grain and coal, however, have sufficient bulk so that the holds can be filled right up to the deck.

Enormous capacity of grain boats—The capacities of these ships are enormous. An average carload of wheat is a little more than 1200 bushels. The average train load consists of about forty cars, or 48,000 bushels. The larger boats will carry over 300,000 bushels of wheat, equivalent to seven train loads, or about three hundred cars. The largest boat now on the lakes will carry nine train loads. The best record the Canadian Pacific Railway has ever reached is to haul into Fort William slightly more than 1,000 cars of grain a day. Therefore only three or four of these big ships a day are required to take care of all the grain this railway can deliver. These ships are loaded at the rate of from 75,000 to 100,000 bushels per hour and unloaded at the rate of from 20,000 to 40,000 bushels per hour, depending upon the machinery equipment of the elevators performing the service.

Why shipment by water is cheaper than by rail—This shows in a very clear way why transportation by water is always cheaper than by rail. One of these big boats carrying six or seven train loads will run eleven or twelve miles an hour or about as fast as the average speed of freight trains, with a coal and labor cost only about one-quarter as much as on the railroad. There has been no investment in roadbed, rails, bridges, telegraph lines and costly terminal yards. The ship itself

cost only as much as a very few miles of track. There is thus only a small investment to consider. It is therefore evident that one of these enormous ships can carry grain very cheaply and still make a good profit.

Comparison of rates lake with rail—The fairest comparison of rates by lake with rail will be to examine the charges between the same points, such as Fort William and Montreal, between which direct shipments can be and are made, both all water and all rail. These charges must of course be reduced to a common denominator, which is the ton-mile representing the charge for transporting one ton one mile. The Dominion Department of Railways and Canals published the rate on grain all water from Fort William to Montreal as .193 cents per ton-mile for November, 1912, which was a comparatively high rate for the year. This is for the small boats which will pass through the canals necessary to reach Montreal. When these are enlarged to permit passage of larger boats, this rate will undoubtedly be materially reduced. The Canadian Pacific Railway all rail rate the following winter between the same points was .402 cents per ton-mile.

Comparison costs wagon, rail and water—To obtain a fair conception of the real cheapness of transportation both by rail and by water, one may very well compare the charges with the cost of hauling farm produce by wagon. The Department of Agriculture of the United States made a comprehensive study of this in 1907. They

concluded that a close estimate of the average cost of hauling by wagon is twenty-five cents per ton-mile. This may be safely used as a low cost in Western Canada. An average rate for transporting grain by rail could be taken as from Moose Jaw to Fort William—eighteen cents per hundred pounds. The all-water rate from Fort William to Montreal already referred to can be used as a fair example of charge for water transportation. Reducing all three systems to the common denominator of \$1.00 per ton gives the result that \$1.00 will haul one ton 4 miles by road, 229 miles by rail and 518 miles by water. Looked at in this manner it is really surprising that our systems of transportation give as cheap service as they do.

▶ *Shipment through various ports*—Montreal is the largest Canadian port. It, however, is only a summer port, as when the St. Lawrence River is frozen navigation ceases and traffic must be carried by rail to tide-water. There are two principal Canadian winter ports, St. John, N.B., and Halifax, N.S. However, both summer and winter a large part of our Canadian grain reaches tide-water via Buffalo and New York City or other American port simply because Montreal cannot handle it. There are neither docks nor ships enough. It is useless to enlarge the docks unless more ships will come. This requires more imports by water. Trade figures show that for some time Canada has shipped by water a great deal more than she has received by water. It is obvious that such a disparity handicaps exporting from all

Canadian ports, Montreal included. Although the same disparity of imports and exports prevails at the American ports, it is the heavy movement of merchandise westward through the American ports which attracts so much of our grain to them.

Through rates via different routes—Although a large amount of our western grain is carried on small steamers through the canals to Montreal, a much greater amount is handled by the big bulk freighters to Georgian Bay or Lake Ontario points, where it is shipped by rail to Montreal. The larger boats carry so much more grain per trip than the smaller boats and hence at a lower rate, that the combination lake and rail rate for this movement is on a level with the all-water rate to Montreal. The combination of all-lake or lake and rail to seaboard and the ocean rate to England or Europe is the same via Montreal or American ports. While occasionally there may be slight variations due to temporary conditions, competition keeps all of these rates at the same figure. During recent years there has been a general increase in the through rate due to increased ocean charges. There has been little or no change in the rate to seaboard. It is not clear just what factors have caused the heavy increase on the ocean. The result, however, has been to heavily increase the cost of getting our western grain to its ultimate destination, which of course has reacted upon the price received by the farmer, as he must at all times sell his grain in competition with that from all the rest of the world.

Difficulties of shipping across Great Lakes and ocean in same ships—Grain for export is never shipped across the ocean in the same ships that carry it on the Great Lakes. Just now there is a very good reason for this in that the canals connecting Lake Erie with the St. Lawrence River, which constitute the only outlet for steamers, are so small that boats which can pass through them would not be profitable on the ocean. From time to time there has been agitation to build a deep water canal connecting Georgian Bay on Lake Huron with the St. Lawrence River so that ocean steamers could come into the Great Lakes. Totally apart from the great cost of the work, it is doubtful if such a plan would be commercially practicable. The so-called cargo boats, which have been described for carrying grain on the Great Lakes and which have no decks below the upper deck, obviously offer the cheapest possible means of transporting bulk commodities, including grain. To work such boats efficiently there must be bulk cargoes in both directions. Such return freight is now secured on the Great Lakes by carrying Pennsylvania coal westward. There has not yet been developed any bulk trade from England or Europe to Canada and there is considerable question whether there are sufficient possibilities along this line to warrant putting large cargo steamers on the ocean to carry grain. Although our grain is always carried in bulk, it is shipped across the ocean on steamers built with many decks to carry package goods back. Such boats would not be profitable on the Great Lakes as there is not enough package freight.

Even if bulk cargoes could be obtained for shipment from Europe and England to Canada in paying quantities, it is very doubtful if the boats could be economically run on the through trip. So much space must be reserved for coal for transatlantic journeys thus decreasing revenue-bearing space that profitable tonnage would have to be left behind as compared with the greater tonnage which can be carried in boats especially built for the Great Lakes. Grain can be handled so cheaply that it seems it would be always more economical to utilize to the highest measure of efficiency the full cargo capacity of the present Great Lakes steamers, and then to transfer the grain to other ships especially adapted to the ocean trade and whose carrying capacity is relatively smaller because of their larger coal bunkers. This means that the saving through efficiency on the shorter Great Lakes journeys more than pays for the expense in transferring the cargo to transatlantic ships.

Shipment to Ontario mills—When our grain is destined to mills in Ontario, it is usually shipped as far as possible by water during open navigation. It is distributed by rail inland from the various ports along the Great Lakes. Such grain enjoys the same rates on the water as if it were shipped for export. On the rail portion of its transportation it is carried at published tariff rates fixed by the railways and applying from point of transshipment to destination according to distance and volume and direction of the traffic movement. These rates vary with different destinations and

are sometimes altered from time to time to meet changed traffic conditions.

All-rail shipment to seaboard—During the winter all grain shipped east must go all-rail. In the past the Canadian Pacific Railway has frequently been over-taxed to haul all that was offered, and some of it had to be hauled through the United States, coming back into Canada at Sault Ste. Marie or Windsor or Sarnia. However, since the Canadian Pacific has double-tracked its line along the north shore of Lake Superior, it alone will probably be able to haul all that is offered in any year for a long time to come. Thus even when the Canadian Northern and the National Transcontinental are ready there will be little or no change in the situation.

Weather conditions are a serious factor in this movement, and a heavy snow storm will completely upset plans which have been carefully worked out for weeks ahead. However, in spite of all its difficulties and its additional cost, a very large amount of grain is moved all-rail during the winter months, and this method of transportation forms a very valuable and important link in getting our grain to its final market.

Lake Shippers' Clearance Association—In all shipments east of Fort William and Port Arthur, whether by lake or rail, the various shippers have facilitated dispatch and simplified procedure by the formation of a co-operative bureau called the Lake Shippers' Clearance Association. It is a voluntary organization formed solely to attend

to these shipments. There are eleven public terminal elevators at these twin ports. A shipper may have delivered to him warehouse receipts on each of these elevators in the purchase of a single cargo. It would be slow and costly to send a boat to receive a few thousand bushels from each. There would also be a multiplicity of documents and records as the small amount loaded by each elevator would have to be treated as a separate cargo. If, however, the shipper can exchange warehouse receipts with other shippers similarly situated, not only he but each of the others can concentrate their cargoes in only one or two elevators, can load the boats quickly, and can handle the shipments with a minimum of trouble. The Clearance Association does this very thing for its members. Its work is so systematized that it handles immense quantities quickly and easily. Practically all shipments are now made through it. Although it is a private association organized to perform only routine work for its members, its service has resulted in economy and efficiency in a troublesome and important detail in the movement of grain, and to that extent its efforts have resulted in a distinct benefit to the community.

Country roads—Transportation really begins on the farm and not at the railway station. Because this portion between the farm and the station is essentially different from that portion beyond the station, its discussion has been reserved until the last.

The service of railways and ships is ready-made for the farmer and he simply pays somebody else

a fee to cover the charges. But with country roads he has to make the transportation for himself. Through the community or the province he provides his own roadway as a public investment, but at all times he individually must furnish his own equipment and motive power in the form of horses and wagons. He is therefore in a position to give himself cheap or expensive service as he makes his roads good or bad.

We noticed that in 1907 the United States Department of Agriculture figured the average cost of hauling by wagon at twenty-five cents per ton-mile. Very recently this same department has issued some comprehensive reports in which they show the results of many different studies of costs on both unimproved and improved roads. The service costs were briefly about twenty-nine or thirty cents for the unimproved and about ten cents for the improved. Our common country roads would fall under their classification as unimproved. Thus it is actually costing our farmers about thirty cents per ton-mile to haul their grain to the railway. For wheat this is equivalent to ten-elevenths of a cent per bushel. Think of it—nearly a whole cent a bushel for every mile hauled. Since the cost for improved roads, which are those with permanent foundations and waterproof surfaces, may be reduced to about ten cents per ton-mile the cost per bushel per mile would then be a little less than one-third of a cent. This means a saving of over one-half cent per bushel of wheat for every mile hauled. Consider this enormous value of good roads—three cents saved on every bushel hauled six miles, which

distance may well be called an average haul. And yet the farmers generally have done little or nothing to improve present conditions so as to secure this economy.

This saving would not only appear in each year's returns from farming, but would also be directly reflected in the value of the land. Put a saving of one-half cent per bushel on a twenty-bushel yield of wheat and we have a total of ten cents per acre. Capitalize this at only ten per cent. and we have added one whole dollar to the value of the land. And this represents the saving on only one mile of hauling. For six miles the value of the land would be raised \$6.00 per acre.

Good roads require very careful forethought and planning. It is a business for trained experts. The cost of building, maintenance and scheme for financing must be given the most careful consideration to select the best means of securing the greatest net returns. Density of traffic movement, nature of soil, proximity and cost of materials, price of labor, and general financial conditions must all be carefully weighed. And not the least consideration is the social advantage to the community in having clean roads usable in all weather, thus enabling easy and convenient communication. This is something which cannot be measured in dollars and cents. It will be a happy day for our country when our farmers attack this problem with earnestness and intelligence, realizing that they must build well and permanently, even if slowly, and that only the best possible assistance and advice is worthy of the task.

CHAPTER III.

INSPECTION

Function of inspection—Inspection is for the purpose of determining the quality of the grain. This is necessary to fix its value. Most grain-producing countries sell on sample, thus fixing quality and value by personal examination and appraisal. In only two or three countries is the quality determined by classification into defined grades by which accepted standards are fixed for both producer and consumer. In Canada this is officially done by a Department working under authority from the Dominion Government. This gives high value to the certificates which are issued on inspection, so much so that they are accepted on foreign markets where it is customary to buy on sample.

Apart from the desirability of establishing standards of quality for purchase and sale, inspection is really necessary because of our system of handling grain in bulk. To obtain the full benefit of bulk handling it is necessary to bin different parcels together in order to economize elevator space. Such bulk binning is only possible when the grain has been graded according to quality. In turn, uniform grades could not be maintained without bulk binning, which gives close averages. Thus the inspection system and bulk handling are both necessary and beneficial to each other.

The service of the Inspection Department includes not only the grading of grain but also the examination of cars and the supervision of binning in the public terminal elevators. Initial or primary inspection is made during transit by rail and is treated in this chapter. Secondary inspection is made upon shipment from terminal elevators and is described in connection with the terminals.

Theory of inspection system—The whole system of inspection in Canada is based upon the classification or grading of grain according to physical qualities. A fair average of each particular grade must be maintained throughout the year. This is so well done in practice that there is little or no complaint considering the vast amount handled. Occasionally a shipper may complain about the grade of a particular shipment, but as a rule such complaint is not material. Also, in some year when crop conditions are unusual, it may be necessary to form new classifications which may not at first be satisfactory to the trade because they are not fully understood. An example of this occurred in the fall of 1912, when about four times as much flax was harvested and threshed as in the preceding year, which in turn had produced the largest flax crop on record. Notwithstanding the supposedly ample preparations made by the terminal elevators, this sudden multiplication of quantities temporarily swamped their cleaning facilities, thus stopping the unloading. The congestion became so bad that the railways had to stop flax loading in the country. This was causing serious loss and to relieve the situation the Grain

Commission ordered flax to be shipped without cleaning when cleaning was impossible.

Sampling cars — Inspection starts with the sampling of cars in transit. This is done at railway centres, of which Winnipeg is the most important. While cars are standing at inspection points they are opened and examined and small samples taken by officials of the Inspection Department. These men work in gangs, each member of which has a particular duty to perform. They are constantly checking each other's work, so that chances for error are practically eliminated. Each sample is taken from several different positions in the car by means of long metal tubes inserted into the grain from the top to the floor. The condition of the load and car is noted. If the car is too full or if for any other reason a fair sample cannot be obtained, the best possible sample is taken for provisional inspection and official grade is determined when the car is unloaded. After the samples are secured the cars are carefully closed and sealed.

During the busy season about two thousand cars are inspected every twenty-four hours in Winnipeg. The work proceeds seven days of the week and twenty-four hours of the day. The samplers must always be ready to open cars as soon as they arrive so as not to delay the movement. So expert do they become that they can sample an entire train of forty or forty-five cars in about one hour. As it takes this length of time to change engines and crews, there is no delay.

Records for inspector—A Government clerk in the railway yard office lists the car numbers and other information from grain way-bills. The number of the car, together with notations as to loading are also put upon a ticket written as the sample is secured and which is inserted in the sample bag. Every sample is then checked against the list of way-bills by car number before the cars leave the yards. It is from these lists that the inspection records are completed and the certificates written. If the way-bill is wrong or if the Government clerk in the railway yard makes an error in copying, of course the inspection certificate is sent to the wrong address. Once in a while a car and its way-bill become separated. This is called a "no-bill" car, and the inspection certificate must be held until the way-bill comes forward or until the car is unloaded and information as to advice is obtained from destination.

Grading—The lists prepared from the way-bills are written in duplicate. One copy contains points of shipment, names of shippers, names of the persons or firms to whom the certificates are to be sent, and the other copy shows nothing but the car numbers. Both copies and the samples are taken every few hours to the main inspection office. Here the two copies are separated. The samples and the copies showing only the car numbers go into the grading room where they are then distributed among qualified inspectors, each of whom has passed severe examinations proving his ability to properly grade grain. Every sample is then examined for grade and

dockage. The result of the inspection is marked on the sheet opposite the corresponding car number. Notations are also made on the card from the sample bag. The sample and card are then put in a tin box and kept for reference in case of complaint or dispute.

Writing of inspection certificates—When the inspectors are through, their sheets show only the car numbers and grades and dockages with explanatory notations. These are sent into the office, where are attached the other copies showing stations from which the cars were shipped, names of the shippers and to whom the certificates are to be sent. For the first time the information is complete. Clerks then write inspection certificates, which are checked against the records and distributed by messenger to firms at the inspection point and sent by mail to addresses outside.

Legal classification of grades—By law grain is divided into five general classes, namely, statutory grade, commercial grade, no grade, rejected and condemned.

A statutory grade is that which is defined by law and is constant from year to year. It does not vary with the different crops. Thus one year's crop of wheat may consist largely of 1 Northern, simply because there is a large proportion which qualifies under the legal definition. Another year there may be little or no 1 Northern, simply because crop conditions have been such that very little of the wheat will measure up to the legal standard for that grade.

Commercial grades are applied to wheat and oats of quality which cannot be defined by law because the characteristics vary from crop to crop, but which should be standardized by type samples recognized in the trade. This is done by a group of experts known as the "Standards Board," appointed by the Grain Commission under the Canada Grain Act, and which meets once a year in Winnipeg, usually during October, to fix the commercial grades for the new crop. As far as conditions will permit, these grades are made the same as the corresponding grades of the previous year.

No grade means grain which has excessive moisture, being tough or damp.

Rejected grain is that which is unsound, musty, dirty, smutty or sprouting, or which contains large admixtures of other kinds of grain, seeds or wild oats, or which from any other cause is unfit to be classed under any of the recognized grades. In practice grain is rejected under three classifications: (1) smut, (2) seeds or other grain, and (3) mixed with heated. When rejected because of smut, the word "smutty" is used instead of "rejected." For the other two classes notations are made "rejected" or "rejected mixed with heated," respectively.

Condemned means grain which is in a heating condition or is badly bin-burnt.

Although the Grain Act makes each of the foregoing classifications a separate grade, in the trade the first two groups of statutory and commercial grades really constitute the primary classifications and the next two groups of no

grade and rejected are used as modifications of the first two. Thus the term "no grade," and the term "rejected" or its substitutes, either separately or in combination, become qualifying or restrictive terms written with the ordinary statutory or commercial grade which the grain would otherwise receive. Condemned grain is a separate and single grade, but when applied to wheat which would otherwise grade 1, 2 or 3 Northern it becomes "condemned No. 1" and to wheat which would otherwise grade No. 4, 5 or 6 it becomes "condemned No. 2."

All grades are theoretically based on consumption value. In practice, however, the grading has drifted away from the theory because the tests are not scientific and apply to the physical qualities such as variety, purity, weight and appearance. Condition and dockage are also considered. Then, too, the system of averages for the different grades destroys to a large extent the value of standards for consumption. Different crops may produce different values in the same grades. For instance, 2 Northern wheat will sometimes be almost as valuable intrinsically as 1 Northern and in other years of little more value than 3 Northern. A system based solely on milling tests would correct this, but would probably be very difficult in application.

Grades of wheat—The statutory grades of wheat are 1 Hard, 1 Northern, 2 Northern and 3 Northern. The Standards Board generally sets three commercial grades, No. 4, No. 5 and No. 6, and there may be a grade of feed below No. 6.

No. 1 Hard is the only grade which never has any modifications. Unless such wheat is absolutely sound and good in every particular it does not receive that grade. Also, Feed is normally of such low value that except under unusual conditions it does not take any of the modifications which would change its value.

To illustrate the modifications of the various grades, wheat of the proper weight and soundness to grade 1 Northern may take any one of the different classifications as follows:

1 Northern.

No grade 1 Northern tough.

No grade 1 Northern damp.

Smutty 1 Northern.

Rejected 1 Northern.

Rejected 1 Northern mixed with heated.

No grade tough smutty 1 Northern.

No grade damp smutty 1 Northern.

No grade tough rejected 1 Northern.

No grade damp rejected 1 Northern.

No grade tough rejected 1 Northern mixed with heated.

No grade damp rejected 1 Northern mixed with heated.

No grade tough smutty rejected 1 Northern.

No grade damp smutty rejected 1 Northern.

No grade tough smutty rejected 1 Northern mixed with heated.

No grade damp smutty rejected 1 Northern mixed with heated.

These modifications apply generally to all grades of spring wheat. However, there is no rejection

for seeds in No. 5 and No. 6 as sufficient dockage to cover all foreign matter is permissible.

The same modifications apply to the grades of winter wheat from 1 A.R.W. to No. 4, inclusive, except that there is no classification of "no grade damp" in the 1 A.R.W. grade and such grain is classified "no grade 2 A.R.W. damp." Winter wheat below No. 4 is included in spring wheat classifications.

Total number all grades of grain—In practice, including the single grade 1 Hard, and two divisions of condemned, we have 150 classifications of spring and winter wheat. In the same manner there are 25 classifications of oats, 20 of barley and 13 of flax. Each of these classifications is distinct and has its own value in the trade. The total of 208 makes quite a comprehensive list and somewhat complicates warehousing in terminals. This, however, is a great simplification over the classifications used up to the fall of 1912. Under the old system there were between five and six hundred separate classifications, there being about 360 of wheat alone.

When inspection is final—The Grain Act states that Winnipeg inspection shall be final. In only three cases will the Inspection Department of its own accord make this inspection provisional, subject to final grading upon unloading of the car—(1) when the car is too full to obtain a fair sample, (2) when there is reason to believe that the car is improperly loaded or "plugged" so that a fair sample cannot be obtained, and (3) when there is nothing to prevent fair and accurate

grading but there is some question as to dockage or condition. In each of these three cases if a certificate is issued in Winnipeg it is stamped conspicuously with words to the effect that the grade is only provisional and that final inspection will be issued when the car is unloaded. Usually no provisional certificate is issued but a small printed notice is delivered showing provisional grading and stating that certificate will be issued upon final inspection when unloaded.

Re-inspection and survey—If the shipper is dissatisfied with either the provisional or final grade issued at Winnipeg, he may ask for a re-inspection. If dissatisfied with the re-inspection, the shipper may apply for a survey. If this requires a fresh sample it can only be procured if the identity of the car has been preserved. The survey is made by a board appointed by the Grain Commission under the terms of the Grain Act. There is a Survey Board at each Winnipeg and Calgary for western grain. These Boards are appointed from prominent members of the grain trade who have had long experience in judging grain commercially. The applicant for a survey must deposit a fee of \$3.00 with the secretary of the proper Board. If the grade is changed the fee is returned to him and is charged to the Inspection Department. If, however, the Inspection Department is sustained and the grade is not changed, then the deposit becomes forfeited. The decision of the Board is final. From it there is no appeal.

Inspection records go with the cars—The railways naturally want to keep their cars moving as rapidly

as possible so as to avoid congestion. Immediately after samples are taken in the yards at inspection points the cars are rushed to destination. The Inspection Department supplies its officials at terminal points with copies of their inspection sheets showing grades and notations on each car as inspected in transit. The inspection at all terminal points is substantially the same. As Fort William is our principal terminal, its service may be taken as typical.

Arrival cars at terminal point—During sorting in the yards, Government officials check the cars from the reports of grades received from Winnipeg. Each car is then labelled with a card giving all the details of the inspection. The cars proceed promptly to elevators for unloading, and if there is any question as to inspection, the grain is placed in a special bin. This releases all railroad equipment promptly. If the elevators are so full that no special bins are available, then it becomes necessary to leave the cars loaded until the irregularities are disposed of.

Examination cars for leaks—When the cars arrive in the yards, Government officials examine them outside and underneath for leaks. Printed forms are provided so that the exact location of any damage can be quickly noted. Although it is not always possible to find evidences of leakage, as a rule any damage to the car is visible and the records become useful in adjusting losses. Employees of the railway also make a similar record.

Identity of grades preserved—The identity of grades is preserved at the terminal points in the public terminal elevators by binning together all grain of the same grade. Any mixing of different grades is prohibited by the Grain Act. On shipment grain is inspected out on exactly the same basis as when received. The identity of individual cargoes is preserved on shipments east. Thus the grain reaches Liverpool as it enters Fort William and the Fort William inspection certificates on cargoes are accepted on the Liverpool market.

Mixing permitted only before final inspection—Mixing is permitted in a limited extent before grain is unloaded into public terminal elevators. There are a few small private elevators who actually buy all grain they unload. They practically limit their purchases to grain which is poor in quality or in bad condition. This they treat and clean and put in good shape. They perform a service which cannot be effectually done by the public terminal elevators because of their large volume of business and consequent congestion. They thus create a competitive market for poor grades of grain which materially raises the price to the farmer. The inspection outward from these small elevators is severe. The grain must be well up to the average to receive the desired grade. Because of this there has been little or no complaint upon their shipments. In fact in the lower grades the output of a properly run private elevator is even more desirable than the average from a public terminal because the grain is so bright and scrupulously clean.

CHAPTER IV.

COUNTRY ELEVATORS

Economic value—Country elevators are part of the system necessary for handling grain in bulk. They, in common with all other grain elevators, are built to take advantage of the flowing property of grain acted upon by the force of gravity. The purpose of the elevator is to cheaply handle grain in bulk by substituting simple machinery for human labor. One man with the aid of modern machinery is able to quickly perform work which would require many men at hand labor.

A modern country elevator will load a thousand bushel car in one to one and a half hours when the grain is already in store. When grain is received from wagons the process is necessarily slower, but even then five thousand bushels will be received and shipped in a ten-hour day or at the rate of five hundred bushels an hour. This includes weighing, which in itself takes an appreciable amount of time for each load. Figuring the average wagon load at sixty bushels, the capacity of the elevator is about seven loads per hour for both receiving and shipping, while the capacity for receiving only is about ten loads per hour. Just compare this with the slow process of loading cars by hand.

Imagine the chaotic situation in Western Canada today if there were no country elevators. Supposing on top of the serious labor shortage for harvest and threshing it would be necessary

to find enough men to load all cars by hand. Probably not more than a small portion of our present shipments would be in the hands of the railways before the close of navigation. This would be due not only to the slow process of loading each car, but also to the very important cumulative effect of delay on each successive trip. Railway records show that 25 to 30 per cent. of all cars shipped are loaded at the platform. Thus, 70 to 75 per cent. are loaded at country elevators, where the work is done so rapidly that a car is loaded and billed within an hour or two after spotting. Without the quick dispatch in loading at elevators grain cars would be unable to make all of the five to seven trips which they now make in the fall.

Saving in bulk handling—The economy of bulk handling begins right on the farm. The grain will flow from the threshing machine into the wagon by gravity and the man who drives the horses can attend to the loading. Then there is the saving in sacks and labor in sacking. The cost of sacks is not less than three cents per bushel and where sacking is done in quantity with most approved methods the labor cost is three-quarters of a cent per bushel. Certainly four cents is a low estimate of total cost of sacking on the farm.

This economy applies to every step in handling grain in bulk. Probably a greater saving occurs after the grain reaches the public terminal elevators and is handled in so much larger units. The shipment by boat, both on the Great Lakes and on the ocean, in bulk shows the greatest economy.

of all. But to secure this it must be remembered that the whole system, starting right back in the country, must be on the bulk basis. Without country elevators the crop would have to be handled in sacks, as is done in other countries.

Even in grading there is difficulty with sacked grain. The Grain Act provides that the charge for inspection shall be one-third of one cent per hundredweight in sacks and fifty cents per car in bulk. The average carload of wheat today is over 1200 bushels. As such a car contains over 720 hundredweight the charge for inspection in sacks would be at least \$2.40 or about five times as much as for bulk grain. Apart from the cost, sacking would probably destroy our present grading system by preventing maintenance of averages obtained now through binning in bulk in the terminal elevators.

Practical result of economic saving—The economic saving in the elevator system goes directly to the farmer. This is apparent in the price received for grain. The United States and Canada are the only two countries in the world where the elevator system is in extensive use and grain is therefore handled in bulk. In both of these countries the farmers receive a much higher price for their grain, based upon its ultimate value for consumption, than they do in any other country because all of the others still use the antiquated methods of handling in sacks and by hand labor. Where no other factors enter in price making, all of which will be dealt with later, the standard price by wagon-load of 1 Northern wheat is only three cents

per bushel under its full market value less freight, which very small margin has to pay all risks and expenses and leave a profit to the elevator. This is the total cost of getting grain to market, except the one item of hauling to the nearest elevator. In other words the farmer can haul his 1 Northern wheat from his threshing machine directly to the elevator and sell it for just three cents under its value in Winnipeg, less freight. When the true value of the elevator system in our western economic structure is realized, the small elevator margin deducted becomes a very inadequate measure of its great benefit and considering the inherent risks and expenses in getting farmers' grain to market it becomes a very cheap price to pay for the service received.

To every farmer using a country elevator there is a direct benefit in the great saving of time at that period of the year when it is most valuable. Immediately he is through harvesting he should get right onto his land for his fall plowing. The value of every day at this season when measured in terms of plowing accomplished is much greater than at any other season. Therefore every hour that the farmer can utilize in preparation of the soil for next year's crop is worth dollars to him. Unfortunately, this great value is frequently overlooked and men who think they are saving money in loading over the platform have yet to learn that it is really costing them many times more than the elevator charges for the same service.

Benefit of having grain weighed—By using an elevator the farmer also has the advantage of definite weight certificates covering every bushel

delivered from his wagon. Even with great care in loading cars there may be some loss of grain in transit. In case of accident or damage to the car the loss may be large. A railway company cannot consider a claim for shortage unless the exact quantity loaded into a car is supported by very good evidence. Grain loaded over the platform is seldom weighed except in threshing, and such weights are not sufficiently reliable to support a claim. Private scales not under Government supervision may present the same difficulty. Even if the farmer is in position to furnish good evidence, it becomes necessary for him to present and collect his own claim for shortage from the railroad company, which is a slow process. By utilizing the facilities offered by the elevator, the farmer gets his exact marketable weights as he delivers each load. He immediately receives credit for every bushel delivered and at the same time shifts upon the elevator all responsibility for shipment.

Methods of handling grain through elevator—From an elevator standpoint, there are only two ways in which grain can be received and handled: (1) as warehouseman, and (2) as merchant. It is true that in practice many or most of our country elevator operators handle carlots of grain on commission or consignment, but it is obvious they do not need elevators to carry on such business. It is therefore merely incidental to and not part of the elevator system.

Thus the farmer in drawing grain to a country elevator may store it for sale at some future time, or he may sell it outright as he delivers it. If he elects the first method, he will receive for each wagon load a storage ticket, which is a certificate of weight and may or may not specify the grade according to arrangement. If he elects the second method, he will receive for each load a cash ticket, which is an order for the payment of money binding upon the elevator company and which also contains information as to the grade and weight, showing how the amount of money is figured. The storage ticket is really nothing but a warehouse receipt, and the cash ticket is but a draft upon the company. These documents are used in almost every line of business. Both storage ticket and cash ticket are legal obligations upon the part of the company issuing them to deliver a specific amount of grain or money respectively. They are transferable by endorsement. The prevalent use of this convenience shows that it has distinct value to the farmers.

Different methods of warehousing—The Grain Act provides two methods of storage—graded and special bin—each defined by its own form of ticket. On the graded storage ticket appears the grade as mutually agreed by the farmer and the elevator operator. It is therefore absolute in its terms defining not only the weight of the grain delivered, but also its grade. This allows its market value to be figured at any time. The special bin ticket does not provide for any grade and is designed

for use where there is a difference of opinion as to the actual quality of the grain. It is based on preservation of identity of the grain until shipment, when it can be loaded into a particular car and the grade thereof established upon inspection in Winnipeg. Although this is good in theory it did not work out very well in practice. It was used entirely for this class of business for many years, but almost invariably led to misunderstandings and friction. The primary difficulty lay in the construction of an ordinary country elevator. These buildings are always as simple as possible so as to minimize the investment. The standard plan consists of nine bins, three on each of two ends constituting six stock bins extending from the roof to the ground. Between these two rows of bins is an open space for machinery, called the "work floor," above which are three smaller bins constituting shipping bin on the track side, cleaning bin immediately behind it and small transfer bin next to the driveway. The large stock bins hold from three to four thousand bushels each, the shipping bin a little more than a carload, and the other two bins about a carload each. As a rule, the shipping bin must be kept free so as to provide working space for shipments. It is thus apparent there is little or no opportunity to special bin a car of grain for any length of time without tying up one of the large stock bins of three or four times the capacity. The inevitable result of endeavors to preserve the identity until shipment was a great reduction in elevator capacity throughout the country. The practice of special binning became so prevalent that the system became

unworkable. The community could not afford to carry the vacant space which could not be utilized because every bin already was partially filled with grain, the identity of which must be preserved.

Try as hard as the elevators could to really live up to their contracts and preserve the identity of each parcer until shipment, in practice it was found almost impossible and errors were constantly occurring. Then, too, there were always complications whenever a farmer had just a little less than a full carload.

No doubt in its general results the system succeeded in giving each farmer the benefit of the individual inspection of his own grain in carlots, but, due to inevitable reduction of elevator space, errors and delays which were unavoidable, the system was very unsatisfactory. Under the contract, too, it became necessary for the elevator company to accept many liabilities which were never contemplated when the system was first started, and the result was that after many years' use it was generally abandoned and there was substituted for it a system of storage called "subject to grade."

Storage subject to grade—Storage subject to grade is covered by an ordinary graded storage ticket with the grade omitted. It is based on the fact that it is not necessary to wait until grain is shipped in a car to have it properly graded by the Inspection Department. The grading is done on a sample anyway, so all that is required to get a correct grade is to secure a correct sample. Such sample is obtained on delivery of the grain to

the elevator. After the Inspector's grade is accepted by the elevator, the farmer is not concerned with the disposition of the grain. Under the special bin ticket the identity of the grain had to be preserved until it was loaded into a car. Under the "subject to grade" ticket the grain can be put into stock bins long before shipment. It is apparent that this method accomplishes all that the special bin system did and at the same time allows the use of valuable elevator space which was wasted under the old system.

Its practical operation is as follows: From every wagon load delivered at the elevator a small sample is taken and put in a large receptacle provided especially for that purpose. A graded storage ticket is issued for every load as delivered, showing the weight, but no grade, and each ticket is stamped across the face "Subject to Inspector's grade and dockage." As the grain is unloaded in the elevator its identity is preserved until the farmer is satisfied that the sample is correct. A portion of this sample is then sent by the farmer to the Chief Inspector's office in Winnipeg with the request that it be graded and that the notice be sent direct to him. The Inspector is always prepared to do this, and upon receipt of the sample he immediately gives it an official grade and sends postcard notice to the farmer. The farmer then takes this notice and his tickets to the elevator buyer who completes the tickets by filling in the grade and scoring out the notation "Subject to Inspector's grade and dockage," initialling both of these changes; or he takes up the old tickets and issues new ones showing both grade and weight.

The elevator immediately becomes responsible for the grade set by the Inspector. It, of course, follows that the farmer is not interested in what becomes of the grain itself as he has the elevator company's warehouse receipts setting forth the correct grade and dockage which constitute a definite basis of settlement.

Shipment stored grain—When a storage ticket, either graded or subject to grade, has been issued for grain put into storage, the elevator company has the right to ship that grain any time it desires to a public terminal elevator situated on the same railway and which may be designated by the owner of the grain. The elevator may then redeem the storage tickets upon their presentation by delivery of grain of like quantity and quality at such public terminal elevator subject to proper charges. Such provision for shipment is absolutely necessary to the operation of the system as the country elevator capacity is nowhere near sufficient to accommodate all the grain offered for storage. If the elevators were required to keep in store in the country all of the grain for which they had issued storage tickets, they would very quickly have to cease operation. Such congestion would cause very serious loss to the community. If the elevators had to depend for payment of expenses and a fair profit upon what they could hold in their buildings at any one time the cost of handling the grain would be so enormous that the system would be useless. Apart from this, the commercial value of the grain depends upon its position in the public terminal and not upon

the fact that it is stored in a country elevator. It is therefore to the advantage of the farmer that grain be shipped out as rapidly as possible. He holds the receipts issued by the elevator and is fully protected. His grain in store in a terminal has an actual tangible market value which it did not possess as long as it was in store in the country.

Value of grain depends on its position relative to delivery at market—The position of grain relative to consumption always determines its value. Grain in store in a country elevator has no commercial value except as it may be shipped for consumption. Grain actually in store in Fort William and ready for immediate shipment for consumption is called "spot" grain and always commands the highest commercial value. This is the "cash" price quoted on the Grain Exchange. Grain loaded in a car at a country station will only command the price obtainable for grain in store in Fort William at the time when the car can reasonably be expected to arrive there. This, less commission for selling, constitutes the "track" price quoted in the country for grain loaded in cars, grade guaranteed by the seller. Grain in store in a country elevator can only command such price as it will be worth when it is eventually loaded into cars, shipped to and delivered at terminal elevators in Fort William. This future value, less freight and a small margin to cover expenses and profit, also risk in loss of grade on lower grades, constitutes the "street" price quoted by elevators for grain by the wagon-load, the purchasers assuming risk of grades. The longer the time required to get grain to the

terminal market the less can the elevators usually pay for it both because allowance must always be made for cost of carrying until delivery at the terminal and because market values are frequently lower for later deliveries. Sometimes spot grain commands a high premium over grain in transit. This is particularly the case when transportation is congested and at the close of navigation. Thus, sometimes the cash value of wheat may be three or four cents higher than the track value and the latter may, in turn, be four or five cents higher than street price. This shows briefly the reason why there may be wide differences between cash and street prices. This will be more fully explained in a later chapter. As scarcity of cars will delay getting grain to market it is apparent a car shortage or any other impediment in shipping has a direct bearing on the value of the grain affected.

Ordering cars—The Grain Act provides in detail for the ordering of cars. Whoever owns a carload of grain may order a car for its shipment. The order must be entered in a book kept for the purpose by the station agent. In entering the order, directions are given whether to place the car at loading platform or elevator. An owner may appoint in writing someone else as his agent to order the car. The agent then enters the order for him in the car order book. Where farmers ship grain through elevators on storage tickets, the elevator buyer is usually appointed agent for the cars. This relieves the farmer of all trouble as the buyer then ships the grain promptly when the car is furnished. He attends to the billing

and all other details. Of course, if a farmer loads his own car over the platform he must himself personally attend to obtaining a car, billing and all other details.

Distribution of empty cars—The Grain Act has very elaborate provisions governing distribution of cars on orders entered with the railroads at each station. Except in specific cases of emergency, such as the collapse of an elevator or grain going out of condition, empty cars must be distributed according to entries in the car order book and only one car at a time can be given in strict rotation to each applicant until everybody on the list has been served once. Then those desiring more than one may receive their second car, one at a time only and in strict rotation until all such applicants have been served once. This procedure must be followed exactly until all applications are filled, one car at a time. New names may be added to the list at any time and every applicant must receive his one car in turn with previous applicants before another round can be started. An elevator owning thousands of bushels must take its turn for only one car at a time along with farmers who have one carload each. When the list of applications is long, which always happens whenever there is much grain offered, the elevator never knows when it will get its second car. The grain business is the only branch of commerce where car distribution is arbitrarily controlled by law. The results are frequently well nigh intolerable.

Injustice present methods of car distribution—

Compare the situation of a small farmer, who grows so little grain he cannot fill a car and who sells it to the country elevator at street price, with that of his neighbor who has enough grain to ship a carload of his own and thus gets track price. If there are plenty of cars and the elevator can keep its own grain shipped out promptly, there will be no difference in the two prices except the very small elevator margin. This situation, however, very seldom occurs. As a rule, the elevator cannot get cars frequently enough to keep its purchased grain shipped out. As this accumulates, the prospect of shipment is pushed farther and farther into the future. As the time of delivery in the terminal at Fort William governs the price payable, it is therefore obvious that the elevator must keep adjusting its price to agree with the price which the grain will command when it eventually reaches the lake-front. If this price declines with delayed delivery, as is generally the case in the fall when most of our grain is sold, it is clear that the elevator must accordingly reduce its street price. At the same time a man with a carload may secure his car, load it and get it to market immediately, thus taking advantage of the relatively high prices prevailing for early delivery. This obviously works to the disadvantage of the small farmer and there is nothing the elevator can do to help him.

It frequently happens where grain is delivered rapidly, thus causing a car shortage, a country elevator may be completely filled with purchased grain in the first week of threshing. Since a

modern elevator holds about 30,000 bushels and since it must take its turn with every other owner of grain for only one car at a time, it is obvious that a farmer who has only a carload will be able to ship his entire crop in one car, but the elevator can ship only one-thirtieth of all it has bought. At that rate the elevator knows perfectly well that it cannot empty itself in time for the close of navigation, and it must therefore immediately base its price on value for December delivery, which is usually four to six cents and sometimes six to ten cents under values for September delivery. This means a loss of just that much per bushel to the small farmer simply because the elevator is not allowed a fair proportion of empty cars to ship grain which it buys by the wagon-load. Sometimes the elevators become completely blocked and cannot receive any grain whatsoever. The situation then becomes so acute that there have been occasions when drastic action contrary to law has been necessary to relieve the consequent suffering.

Because of unforeseen conditions at particular points, every year several and sometimes many elevators of a large line company will be carried into the period of closed navigation with full stocks of grain purchased at high prices based on early shipment and for which cars could not be procured. This causes a heavy loss as purchase price plus cost of carrying cannot be realized upon final sale.

Economic loss present methods car distribution—
There is a grave question that perhaps this

distribution of one car at a time is costing the country a large sum of money each year and that the brunt of the burden falls upon the small farmer who can least afford it. Where an elevator is serving a community it seems only fair to give it cars in proportion to the amount it purchases. The law says it must store without discrimination and it is common business prudence that it must also buy without discrimination. The only limit to either is the capacity of the elevator according to grades offered. If a more equitable system of car distribution were adopted, the movement of grain would be speeded up materially and the value of the elevator system to the community would be greatly enhanced. This would be immediately reflected in the increased prices which would be paid for grain by the wagon-load.

Car shortages on different railways compel differences in prices—The effect of car shortage on street prices may not be the same on all railways. Sometimes one railway will have plenty of cars and get its grain to market very quickly while another railway will experience a car shortage and the movement of grain will be greatly delayed. Where market prices are lower for the more distant deliveries there must, of course, be a corresponding difference in price paid in the country. Thus the situation sometimes arises that stations very close to each other but on different lines of railway will have different street prices. Perhaps two elevators operated by the same company, one at each of two such places, will be paying different prices. This sometimes leads to the assumption

that the elevator company is arbitrarily depressing prices at the lower points. This, however, is not the case as every elevator always pays just as much as it possibly can in order to attract the greatest amount of business. Competition takes care of this. No elevator ever reduces prices unless it is forced to and a car shortage is a most potent factor in compelling price reduction.

Weighing—Weighing is always given very careful consideration by a well-run elevator company. A modern country elevator contains the best scales obtainable. These are carefully tested frequently by travelling superintendents of the company. They are always inspected at least once a year by the Department of Inland Weights and Revenue of the Dominion Government. The officials of this department are constantly travelling about the country testing all scales used by the public. Their routes are not known. They come and go as they please. They have keys to all country elevators. They keep the scales constantly adjusted. The first information received by any line elevator company that its scales have been inspected is the bill for expenses of the inspector.

No properly managed elevator company can ever afford to give anything but correct weights. It expects to do business year after year with the same customers. It must therefore give satisfactory service, and the first requirement of good service is correct weighing.

In all businesses weights to the amount of a wagon-load or more are usually taken at the nearest ten pounds. The error on any one load can never

be more than five pounds and in the long run there is no error at all. This practice is followed in weighing grain at country elevators, as the additional time consumed in weighing closer would be economic waste and very annoying to customers.

No buyer is permitted to give false weights. This also means he must figure pounds into bushels so as to give full credit for the entire weight. If he is dishonest in any respect in the matter of weighing he becomes liable for criminal prosecution for common theft and he makes his company criminally liable for fraud if it had knowledge of and consented to his action.

There will almost always be a difference between elevator and threshers' weights, due to the fact that the threshers' scales are automatic and rest upon uneven bearings because the threshing machine itself is never quite level. Such scales were never intended to give accurate weights. Their only purpose is to give a close estimate to determine charges.

Allowance for shrinkage—Every farmer who has studied the handling of grain on his farm knows that newly threshed grain cannot be handled or stored for even a few weeks without loss by shrinkage. It is caused by partial loss of dust contained, also by the evaporation of slight excess of moisture which was not sufficient to affect condition. Experience in the grain business has proved conclusively that there is appreciable invisible loss particularly at country elevators, and as there is no allowance in price or tariff to cover it, deduction must be made from the grain.

Thus on all grain received a small deduction is made, varying from nothing to one-half of one per cent., depending upon the characteristics of the particular parcel. This deduction has to be increased when the grain is in bad condition. Experience has shown that when such grain comes from the thresher its shrinkage is considerable. One per cent. has been found to be a reasonable allowance on tough or damp grain and deduction of this amount is made. The Grain Commission has recognized the commercial necessity for such allowances and approves of the deductions made therefor.

Dockage—The question of dockage has a direct bearing upon weight. Only grain which is so badly mixed that it cannot be cleaned is sold on gross weight. Since there is very little of this, it is safe to say that all grain is sold basis net weight. This means that fair allowance has to be made at a country elevator for dirt and weed seeds contained in grain just the same as is made at inspection for market. A pound of the dirty grain is weighed on a small scale. This is then screened by hand in standard sieves prescribed by the Grain Act. The clean grain is then weighed on the same scale, which automatically shows the percentage of dockage taken out. The whole process is very simple and is done with the weighing so that the farmer may check and confirm the results.

Whenever there is any doubt as to the grade, the buyer may agree to give the higher grade in consideration for a little extra dockage. This

is perfectly fair as it is part of the bargain made when the grain is delivered.

Difficulties of accurate grading—Grading is an act of judgment.—There is no scientific and definite test. The determination of grade depends upon the human senses backed up by knowledge of the different qualities required. If senses or knowledge are faulty, the grading will be wrong.

Grain in different districts has different characteristics. A man may conscientiously think that he is giving the correct grade when he says wheat is 1 Northern, but as a matter of fact, due to some peculiarity which is not clearly apparent, it is only a good 2 Northern.

Crops vary from year to year. No two will ever have exactly the same characteristics. An intelligent buyer will grade wheat 1 Northern because it seems to be a good 1 Northern as he remembers that grade from the previous year. To his sorrow, however, he may find that he has made a mistake, due to faulty memory. Before he learns his error he has filled his elevator with graded grain. This causes serious loss to his company in actual dollars and it puts the buyer in the embarrassing position of having to materially reduce his grades to put them on a correct level. This causes dissatisfaction among his customers. They cannot believe that he has been wrong and they are convinced that he has arbitrarily lowered his grading to make more money at their expense.

Then, too, grade is a question of bargain as it determines price. The farmer will naturally desire

to get the highest grade he can. The buyer wants to be perfectly fair so as to give the farmer all his grain is worth, but at the same time he wants to protect his company against loss, but no one is present to counteract the pressure of the farmer. Thus the natural tendency is for buyers to over-grade on their receipts as a whole.

Loss of grades in practice—When grain is inspected on shipment, there is almost invariably found a loss in grades compared with receipts. This may amount to as much as 10 or 15 per cent., or even a greater proportion, of the cars handled by a large line company, and is considered one of the ordinary hazards of the business. On contract grades there are no allowances in price to cover this risk because the differences in values are not large. In wheat, for instance, 2 Northern cannot be more than three cents cheaper than 1 Northern because it is deliverable at that discount upon 1 Northern contracts under the rules of the Winnipeg Grain Exchange. As a matter of fact, it usually runs about two cents under 1 Northern. Also 3 Northern cannot be cheaper than eight cents under 1 Northern because it is deliverable upon 1 Northern contracts at that discount, according to the rules of the Winnipeg Grain Exchange. It usually runs about three cents under 2 Northern. Grades below 3 Northern are not contract grades, that is to say, they are not deliverable at all upon contracts for 1 Northern. Therefore their prices may, and do, show comparatively wider differences, depending upon the ordinary market factors of value. A

mistake in judgment causing a loss in grade from 1 Northern to 2 Northern or from 2 Northern to 3 Northern is not nearly as serious as it is in grades below 3 Northern. There is, therefore, an allowance made in street prices of the lower grades to partially overcome such losses. The allowance increases as the grade reduces in somewhat the same proportion as the difference between grades increases. That is to say, it is very much more serious to lose a grade from No. 5 to No. 6 than it is from 3 Northern to No. 4, and therefore the allowance for risk of loss of the lower grades must be proportionately higher than the allowance for risk of the higher grades. This loss of grades will sometimes necessitate a reduction in price on the low grades equal to the reduction caused by car shortage and the two of course must be added together in determining prices.

However, even with all the money allowance which can reasonably be made in price and with all the dockage allowance which can be bargained for in setting grades, losses from wrongful grading run into enormous figures. The minimum any country elevator is expected to handle to show a profit is 50,000 bushels. Some of them run to 200,000 bushels and even higher on a year's business. On a loss therefore of only one cent a bushel the total cost per elevator may be from \$500 to \$2,000. Multiply this by anywhere from thirty to one hundred and fifty elevators, according to the size of the line, and an idea of the enormous risks involved is obtained. This, of course, is a maximum loss which probably would never be reached in practice, but it illustrates the necessity

of providing all possible safeguards. The worst of it is that the nature of the business is such that incorrect grading does not become apparent until actual loss has occurred. It takes so long to ship grain from an elevator to an inspection point and elevators fill up so rapidly in the busy season, especially if there is a car shortage, that these losses will sometimes run into very large figures before they are discovered. One of the ordinary profits of the business is derived from carrying grain in store for May delivery. If, therefore, grain has been put into store in the fall for shipment in May, it may not be possible to discover any material error until shipment is made in the spring. As this is at an interval of several months after the stocks begin to accumulate, it is easy to see that a great deal of grain may be bought on an incorrect basis entirely unknown to the management. Of course, the situation is watched as closely as possible by travelling superintendents and by having buyers send samples to their head offices with notations as to their grades, but no method of operation or supervision has yet been devised to prevent costly losses in grades which benefit the farmers at the expense of the elevators.

Overages—It is apparent that there are two factors in determining surplus or shortage in a country elevator—weight and grade. The one is incomplete without the other. Suppose an elevator receives 10,000 bushels of wheat and, because the buyer has been a keen bargainer for dockage, ships 10,050 bushels. Here is an

apparent overage of 50 bushels. But suppose we find that the receipts were all graded in as 1 Northern and that the buyer overgraded as shown by his shipments, which inspected 7,000 bushels 1 Northern, 2,000 bushels 2 Northern, and 1,050 bushels 3 Northern. Suppose average values for the year were \$1.00, 98 cents and 95 cents for 1, 2 and 3 Northern respectively. Reducing the different items to the common denominator of dollars at the prices named, gives the following result:

RECEIPTS		
10,000 bus. 1 Nor. at \$1.00		\$10,000.00
SHIPMENTS		
7,000 bus. 1 Nor. at \$1.00	\$7,000.00	
2,000 bus. 2 Nor. at .98	1,960.00	
1,050 bus. 3 Nor. at .95	997.50	
		<hr/>
		9,957.50
Loss	\$	42.50

Our apparent overage thus becomes an actual shortage. Exactly this situation is constantly occurring in practice and the example well illustrates the fallacy of looking only at weights.

The method shown is used by the large line companies in making annual statement for each elevator. It is the only manner in which the truth can be ascertained. It shows how closely interwoven are weights and grades, and thus how carefully each must be watched to safeguard the other. It is these statements that tell the story and it is the perpetual fear of the ablest management with the best of men and organization that the final figures will show a loss.

Cleaners—Cleaners are not now used as much as they were in the past and very few new elevators have them. This is partly due to the fact that elevator building has been confined in recent years principally to the new territory in Saskatchewan, where the ground is clean and there is very little dockage. But even in the older districts it is common practice not to use them where they are installed, because it is economy to pay freight upon the screenings in the grain so as to get the weed seeds shipped out of the country.

The presence of weeds in any farming district is very expensive. Weed seeds in the form of screenings cannot be used for any purpose around the farm without spreading the growth of the weeds in each succeeding year unless all seeds have been carefully and finely ground so as to destroy the power of germination. Boiling will accomplish the same result but screenings cannot be treated this way in volume. They must be so finely ground that they become practically flour and can be sifted through bolting cloth. Machinery to accomplish this is very expensive and it would be economic waste to make installations at country points to grind the comparatively small amounts available at the various stations. When cars are once loaded it is impracticable and expensive to stop them in transit. Therefore it is economy for the community to ship out its screenings with its grain, pay the freight on them and thus get them to terminal points where they can be disposed of without fear of contamination. As to the freight, the farmers are directly interested only in the screenings in stored grain because the

elevators assume all expense of shipping street grain and no allowance is made in prices to cover freight on dockage—the extra cost is considered an expense of the business.

Moreover, the best of cleaners in country elevators are rather small and cannot do their work efficiently under the conditions surrounding them. Therefore it is generally considered fairer to the farmer to take his gross weights less dockage as determined by test rather than to run his grain over the cleaner and then take the net weight. In fact, about six years ago Government officials then connected with the work suggested that all country elevators stop using cleaners and some influential farmers even proposed that they be removed entirely from the buildings. However, they had already fallen into such general disuse that it was unnecessary to push the matter.

Investment in elevators—Practically without exception, all country elevators are built upon property leased from the railways. Therefore in figuring the investment it is only necessary to consider the cost of the buildings as the leaseholds have no value. A modern 30,000 bushel elevator without cleaner costs about \$6,000. This is equivalent to twenty cents per bushel. If cleaner is installed it will cost \$500 to \$600 more. Since comparatively few elevators have cleaners, in considering the investment in country elevators in Western Canada it is fair to base the value upon installations without cleaners. The figure of twenty cents per bushel noted may be used as a fair estimate because the few buildings which are

more expensive per bushel will be offset by the older houses which are not worth quite as much. All of the country elevators of Western Canada today have a capacity of about 84,000,000 bushels. Taking this at twenty cents per bushel shows a total value of \$16,800,000, which may be considered a very fair estimate of the elevator building investment. In addition to this there is a large amount invested in necessary accessories such as tools and gasoline drums. Furthermore, large amounts must be provided in working capital and investment in office space, etc. It is probably safe to say that, including all of these various items, \$21,000,000 or \$22,000,000 are today invested in the country elevator business alone. This is a very large sum for only one branch of the grain trade.

Elevator charges—The tariff of the country elevator is very simple. It provides for only two maximum charges— $1\frac{3}{4}$ cents per bushel for receiving, cleaning (where cleaners are used) and shipping grain, including fifteen days' free storage; and one-thirtieth of a cent per bushel for storage per day after the first fifteen days, both of which include full insurance. These rates are approved by the Board of Grain Commissioners under the Canada Grain Act and must be enforced without discrimination among customers at any one station. The rate of one-thirtieth of a cent for storage depends entirely upon the capacity of the elevator, the keeping qualities of the grain and the length of time for which grain is normally in store. As these factors are identical at all points, this rate is

uniform throughout the West. The handling charge of $1\frac{3}{4}$ cents per bushel depends principally upon the quantity of grain received. This, therefore, may be affected by local conditions at different stations. Where there is severe competition, it may be sound business to reduce this handling charge to the very minimum necessary to cover expenses and sometimes even below cost because it is frequently cheaper to operate any plant or factory at a small loss rather than not operate at all. Furthermore, because of the lesser value of oats the charge for handling is only 1 or $1\frac{1}{4}$ cents on the principle that the full charge would be too heavy a tax upon the oat crop. Neither the handling nor storage charge is larger in Canada than in similar places in the United States and as a rule is less. The usual handling charge in the States is 2 cents per bushel, including the first fifteen days, as against our standard charge of $1\frac{3}{4}$ cents. This in itself effects a considerable saving.

Warehousing and merchandising—If country elevators depended entirely upon storage business for revenue they would not make commercial profits. Practically all elevator companies are grain merchants as well as warehousemen. There is therefore another element of profit accruing through the merchandising of the grain. Also, if country elevators had to depend upon their merchandising business for their total revenue they would undoubtedly be commercially unprofitable. To be successful financially they must do both kinds of business and as much as they can attract to their doors. We have no example

of straight merchandising without warehousing, so we have no definite knowledge as to how its single operation would work in practice. We have, however, examples of warehousing without merchandising, and experience has shown conclusively that such cannot be successfully carried on at a commercial profit. The outstanding example is the experiment by the Province of Manitoba of operating Government elevators for storage purposes only. This operation was carried on for two years, sufficiently long to give it a fair trial. Each year there was a heavy loss. Their elevators were then leased to the Grain Growers' Grain Company, who now operate the same buildings not only for warehousing but also for the merchandising of grain. Although their operation showed a loss at first, it seems now to be on a profitable basis, apparently showing that the revenue from both sources will show a profit where that from only one source will not.

There are other examples of warehousing without merchandising by independent elevators in single units, notably local farmers' elevators at various points in Manitoba and southern Saskatchewan. As a rule these are conducted without loss, but it is safe to say that they do not make commercial profits. Probably the principal factor in securing operation without loss is their management by men living on the spot who give them very close personal supervision without compensation. Such operation, however, is not on a commercial basis and could not possibly attract sufficient investment to handle the entire crop of any one district, to say nothing of the country as a whole.

The carrying of grain from December to May is to take advantage of the difference in the market prices. This is the period when navigation on the Great Lakes is closed and shipment east must be made all-rail. The difference in prices between December and May is usually sufficient to show a profit to the country elevators after allowing for the cost of carrying the grain. The buildings are designed to handle and store grain during the shipping season. They would be comparatively idle during the inactive winter months unless other methods were developed. Therefore the companies take advantage of this market situation and whenever the difference in prices is sufficient to cover the cost of operation, insurance and interest on the value of the grain and show a profit, they buy all they can so as to augment their earnings.

The elevator has no monopoly on this kind of business. The farmer can make this profit for himself by carrying his own grain. Instead of selling in December on an all-rail basis, he can carry it in his own granary, the only commercial expense being insurance and interest.

Sometimes, however, the grain will not keep because of poor quality or bad condition, and sometimes too there are counteracting influences in the market which upset the natural differences in prices so that there is no profit after paying expenses. In such cases a country elevator will ship its grain throughout the winter and this source of profit then disappears.

Classification of elevators—Country elevators as operated today in Western Canada may be

classified in two grand divisions: (1) those called "line" elevators, operated in groups by large companies known as "line" elevator companies, and (2) those called "independent" elevators, operated locally as individual units.

The first class may be subdivided into elevators operated by milling companies as adjuncts of their mills and those operated by merchandising companies which deal in the grain itself without any direct relation to the flour milling business. The mill elevators are operated by our large milling companies, such as Lake of the Woods, Ogilvie, Western Canada Flour Mills, and Maple Leaf Milling Company. Some of the smaller mills in Western Canada have small groups attached which are operated more or less locally.

Line elevators operated by grain merchants include those of the large line companies operating from a central point, usually Winnipeg, also those operated by the so-called co-operative or farmers' companies, such as the Grain Growers' Grain Company, Saskatchewan Co-operative Elevator Company, and the Alberta Farmers' Co-operative Elevator Company.

The only difference between the ordinary line and farmers' companies is in the organization of the corporations. Methods of operation are the same, and they are all keen competitors. The co-operative companies give no different or better service than the line companies. Results to customers are identical. They have built more elevators, resulting in over-building at many places. Although they have introduced more

competition in the business, a little reflection will show that too much competition is just as bad as too little. The community must have enough elevators, but it should not be saddled with the burden of carrying too many.

The other grand division, that consisting of independent elevators, includes the local farmers' co-operative elevators and those owned by local dealers, all of which are operated in independent units by the owners themselves, who usually live at the stations where the elevators are situated.

This broad classification is based upon the organizations necessary to operate. It is easy to see that the large line companies operated from a central point require rather elaborate and extensive operating organizations of field men to supervise the work and service of the individual elevators. This has the advantage of keeping customers thoroughly posted on market information received daily from the head offices.

Difficulty of securing good men—It is the constant aim of every elevator company to secure thoroughly competent and reliable men for buyers at all stations. At best the business is seasonal. At many stations the marketing is sufficiently distributed throughout the year to warrant practically permanent employment, while at many other stations the season is so short that only temporary employment can be given. In the latter case it is the desire of every operating company to secure the services of somebody for each such station who has other business from which he can be spared during the active grain season. In this way they try to secure good men and retain them year

after year, but it is extremely difficult to find men whose businesses will permit this. Therefore it is frequently necessary to take on new and untried men. In every case their records are carefully investigated and, of course, no one is hired who has not good recommendations. But the mere fact that these men do not know the grain business and do not understand the policies of their companies may make it very embarrassing to the managements. When they are courteous, intelligent and active they quickly develop into good buyers and are given better positions. There are always some, however, who do not measure up to the required standard, and of course such men are not kept under employment any longer than possible. Unfortunately, however, it is sometimes impossible to replace them in the midst of a busy season and the companies are then faced with the embarrassing necessity of having to work through them even though it may be known they are not giving good service.

At those stations where there is sufficient business to warrant keeping on regular buyers, the men are always of very good type. They thoroughly learn the policies of their companies and realize the importance of giving the best of service. They become very valuable in cementing the good will of their customers to their companies. It is very rare indeed that there are complaints against buyers of this type. It is from these men that travelling superintendents and eventually general managers are developed. It is truly unfortunate that the nature of the business will not permit all elevators to be operated by this high class of men.

Co-operation among elevators—There are more than 2,500 country elevators at nearly 1,000 stations. Many things which are necessary for all the elevators can be more effectively done through a common agency than by each company for each elevator.

For instance, gasoline and oil are used in every elevator and it is convenient and cheap to distribute it from a common depot.

Also it is desirable to collect crop statistics from time to time through elevator buyers. This can be best done through a central office where the work is systematized.

We have seen that competition compels all elevators to pay as much as possible for grain. They must therefore work on the narrowest possible margins. As these margins must be the same for all, the street prices are usually on a uniform basis. Such prices are called "list prices" and are the same at all stations having the same freight rates.

It is therefore economy to send only one telegram to each station showing price changes and for all elevators at each station to use the one message. This is the practice followed, and any local condition requiring prices different from list is covered by standing instructions to pay so much over or under list as the case may be.

All of these services are performed by a co-operative company among the country elevators called "The Northwest Grain Dealers' Association." Its only object is to save its members unnecessary expense in trying to do separately those things which can be better done through a central agency.

Government bonds—To protect all storage tickets issued by country elevators, the operators thereof must file bonds with the Board of Grain Commissioners to protect customers. The holders of such tickets therefore have for security not only the financial resources of the companies, but also these surety bonds. No large and efficiently operated company has ever yet defaulted on any of its storage tickets or other obligations to the farmers. Therefore no bond of any large and well managed company has ever been needed to protect its creditors. The only defaults have been with the smaller and weaker companies who have not been efficiently managed. Such results in the aggregate have been really very small. It is safe to say that the total loss has been negligible considering the entire grain business of the country. It is therefore apparent that the grain business of Western Canada is very well looked after and the farmers have every possible protection that commercial prudence and foresight can devise. Not only is their grain quickly and well handled in any manner that they please, either by immediate or deferred purchase or for their own accounts by the system of warehousing, which enables the farmer to deal in receipts instead of the commodity itself, but the entire process is backed with strong guarantees.

Government licenses—Coupled with the system of Government bonds is also a system of Government licenses. Every elevator must procure such license from the Board of Grain Commissioners before it is allowed to operate, and it cannot

continue operation if such license is cancelled or revoked for any reason whatsoever. The first requirement to secure and retain such license is financial responsibility backed by a surety bond. ~~Immediately there is a single default the operating~~ company must close its elevators through revocation of its licenses by the Grain Commission. This puts a definite check upon irresponsibility and constitutes in itself a very effective safeguard over the interests of the farmers, thus making the value of the country elevator to the community just that much greater.

CHAPTER V.

TERMINAL ELEVATORS

Function—The name "terminal elevator" in Western Canada is commonly applied to the public terminal elevator which does purely a warehousing business for the public and is situated at a point conveniently located on a railroad designated as a "terminal point" by the Governor-in-Council of the Dominion of Canada. It receives, weighs, cleans, stores and ships grain which has been inspected and which has been set on its tracks by the railway. It must perform its services entirely for others, as the law prohibits it from owning or dealing in any grain for its own account. The most important terminals are situated at Fort William and Port Arthur, and a description of the operation of any one of them will be typical of all the others.

Process of unloading—The railway switch engine sets all loaded cars on the elevator tracks at one side of the building. Individual cars are hauled into the elevator by steel cable and winch, which is part of the elevator machinery. When the cars are empty they are hauled on through the building, where tracks are provided for them. In this way the elevator starts operation at each switch with all the loaded cars on one side and it finishes with all the empty cars on the other.

The empties are hauled away by the switch engine when it brings in the loaded cars.

When loaded cars are set on the siding a Government inspector and an employee of the elevator examine them to see that the seals are still intact and the cars in good condition and without leaks.

The numbers on the seals are recorded and full notations made of any apparent damage to the car. This is really a duplicate record of that made in the railway yards and is for the purpose of confirming all other reports and to provide a complete examination at each stage of shipping.

A list is made in duplicate showing car number and all the information contained on the inspection cards, which were tacked on the cars in the railroad yard. This list is checked against the inspection report received from Winnipeg. The seals are then broken and the cars are ready for unloading. The cards are removed and sent to the top of the elevator, where are situated the scales. The Government weighmaster there receives the cards and checks them against the duplicate of the list of the cars on track which has been furnished him by the first inspector. This shows the weighman the exact order in which the cars are going to be unloaded and gives him full notations as to grade so that he will be able to do his work intelligently and can spout the grain to the proper bins.

Grain is unloaded into receiving pits which are simply big steel tanks placed under the tracks and covered with open gratings. There are usually several pits under each unloading track. In this way several cars can be unloaded at once. There

may be two or more unloading tracks, which are used alternately. As soon as a car is spotted over a pit, the grain door on one side is opened with a crowbar. Two men, each with a power shovel, then climb into the car. These shovels are simply large boards about $2\frac{1}{2}$ feet square with two handles at the top. They are dragged to both ends of the car, pushed hard into the grain and then the shovels with the grain in front are pulled to the door automatically. In this way the cars are very quickly unloaded. It takes on the average about a half-hour for each car—to spot it, open the door, shovel out the grain, sweep it and haul it away.

Just before the grain door is opened a Government inspector supervising the unloading of the cars telephones to the Government weighmaster at the top of the elevator the car number and the number of the receiving pit where the car is being unloaded. This is entered in both the elevator and the Government records. As the grain is running out of the car this Government inspector takes samples for examination, thus checking the grade reported on the inspection sheet and on the card which was attached to the car. If the car is to be re-inspected on orders, or if anything is found wrong with the grade as reported, a sample is taken and sent up to the inspection office for grading. The grain is held in a special bin until final disposition can be made.

Weighing—By opening a gate at the bottom of the receiving pit the grain runs into an elevator leg and is elevated to the top of the building,

where are situated the scales. These scales are of such large capacity that an entire carload is weighed with only one draft. This helps to make the weighing accurate, and eliminates clerical errors which might occur through weighing in small drafts. The pit is constructed of smooth steel and the bottom is sufficiently steep that all grain quickly runs out. Also the elevator leg is so constructed that there is no chance for grain to lodge in it. Thus all of the grain from each car goes into the scales.

There are no track scales at any public terminal for weighing grain in the cars. It is far more convenient and much more accurate to weigh only the contents. As grain must be elevated from the receiving pit to the top of the building in order to put it into bins, it is therefore economical to weigh it during this process, and to accomplish this it is necessary to put the scales higher than the bins. The same condition applies to shipping, so all scales both for receiving and shipping are placed in the cupola of the elevator. Supports for the foundations of the scales are carried down through the building directly to concrete piers in the foundation. The sills of the scale frames are very heavy. They are constantly kept level and in perfect adjustment. There is a special Government officer stationed in Fort William whose sole business is to supervise scales and weighing. He has assistants who are performing this work all the time. There is no chance for any scale in any elevator to go wrong. There are too many skilled men looking after it. In addition to the supervision of the Government officials

there is, of course, that of the elevator employees, and this is further checked periodically by special independent examination and adjustment by a man sent by the scale makers. In this way accuracy is constantly maintained.

~~The fall of grain directly from the elevator~~ buckets into the scales would be injurious to them. The grain is therefore led into big hoppers, or garners as they are called, immediately over the scales. Their use also facilitates speed. The bottoms of the garners open directly into the scale hoppers, but of course do not touch them. While the garner is filling its outlet is closed and its scale may be weighing or discharging. When the scale is empty and the garner valve is opened the grain drops a very short distance and in a large and steady stream into the scale.

There are separate scales for receiving and shipping. Each scale has its own garner, which is directly connected at the top with a separate elevator leg. There are thus as many legs as scales. Those for receiving are on one side of the building and those for shipping are on the other side. It is necessary to split the operation of the plant in this manner so that unloading and shipping can be carried on at the same time and without interference. The fact that there are separate sets of scales and legs and that each set forms a direct connected unit eliminates errors through confusion in process.

Every draft of grain, on both receiving and shipping, is weighed by two weighmasters, one representing the elevator and the other representing

the Government. Although the weighing is done only once, every weight is checked by each weighman independently of the other. Each makes a separate record in writing at the moment. In addition to this, a scale ticket is indelibly stamped with the official weight by figures which set themselves automatically. The dies which make the impression are not distinguishable to either weighman. The ticket is simply inserted in a slot, a lever is pressed and the proper impression is stamped. Every ticket is compared with every entry of each weighman to see that all agree. There is not much chance for error with two men continuously checking each other on three separate records. On each ticket are full notations showing the car number or the name of the steamer for which the weighing was done. These tickets are collected each day and taken to the inspection office. Here they are filed away as part of the permanent records for future reference.

These scales are very accurate, but for convenience the weights are taken in the nearest even ten pounds. This might make any one draft five pounds over or under weight. Such error, however, is commercially negligible and in the long run is really no error at all as the averages come out at the correct weight.

Binning—The Grain Act says that all grain shall be binned only with grain of like grade and charges the Inspection Department with supervision of binning. This is looked after in practice by the Government weighman. As soon as a carload is weighed the weighman turns to his inspection

record on that particular car, which he has already received from the inspector downstairs, and confers with the elevator weighman as to its disposition. The grain is not allowed to leave the scale until the spouts have been properly set. They are all in plain sight as the floor is cut away around each scale.

Grain as unloaded may be all ready for storage or it may require cleaning or other treatment. If no treatment is necessary it may be put at once into large stock bins in the storage annex where it remains until drawn off for shipment. If the grain requires to be cleaned or treated it is put into bins in the workhouse which are provided for temporary storage until the necessary treatment is completed.

Cleaning — Not much treatment other than cleaning has to be done to our grain. Fully two-thirds or three-fourths of all wheat, and practically all flax has to be cleaned. Oats are seldom, if ever, cleaned, and there is not a great deal of cleaning to be done to barley. About sixty per cent. of all kinds of grain must be cleaned. Cleaning is done on different machines for the different grains. These machines are all arranged on the ground floor of the workhouse of the elevator. All of the bins in this portion of the building are elevated so that there is a clear open space for the cleaning machinery. The machines are of the very best design and construction and of very large capacity. These are constantly attended by elevator employees who do nothing else. In addition to this a Government

inspector supervises the work. The machines are constantly adjusted for fast or slow work according as the grain is comparatively clean or dirty. This insures that the grain when it leaves the machines is commercially clean. The cleaned grain is then re-elevated and put into proper stock bins where it is ready for shipment. To maintain speed on the cleaners it is customary to clean harder than necessary. This drives some of the good grain into the screenings. The screenings must then be recleaned to recover the good grain, and to do this they are elevated to screenings machines at the top of the building. The grain is then run into the stock bins according to grade and the screenings are run into screenings bins. The dust from the cleaning machines and screenings separators is collected mechanically and burned in the furnaces.

Drying—It is sometimes necessary to dry grain, especially so in those years when our crop generally has excessive moisture. This is done in what is called a drier, which is nothing but a great big steam radiator which heats the grain at an even temperature and slowly drives off the excess moisture. While this is being done warm air is blown through it to assist in the evaporation. When dried to the required degree, it is then put into another compartment of the drier where it is cooled to outdoor temperature. This is necessary to prevent sweating when it is put back into the stock bins.

Drying, like every other process in a terminal elevator, is performed under Government super-

vision. An official of the Inspection Department checks the work and determines whether or not the grain has been sufficiently dried and properly cooled.

Shipping—When grain is to be shipped orders from the office of the elevator company are sent to the foreman and to the inspector at the elevator, specifying the amount and grade, and whether shipment is to be by boat or by car, and if the former, the name of the boat. Usually these orders are telephoned, but are always confirmed immediately in writing. Each man who has any part in the shipment gets a copy of the written order. The foreman and the inspector decide from what bin the grain is to be drawn. If the shipment is a cargo, the elevator may start at once to weigh up the grain into its shipping bins. These are large bins on the dock side of the workhouse. They discharge through long spouts directly into the holds of the steamer. To see that they are entirely empty before any grain is weighed, they are examined by lowering electric lights into them, both by an employee of the elevator and by a Government inspector. The outlets are also examined to see that they are shut. There may be eight or more of these bins. As they hold several thousand bushels each a large quantity can be weighed up before the boat arrives.

As grain is drawn for elevation to the scales for shipment by boat, a Government inspector is stationed at the outlet of the stock bin to watch the grain while it is running. He takes samples

which he examines then and there and which he also preserves for reference. If there is anything wrong with the quality or condition he immediately shuts off the stream and investigates to remove the trouble. At some other place on the elevation of the grain and before it runs into the shipping bins, is stationed another inspector who takes samples from the stream and checks the inspection of the Government official at the stock bin.

The shipping scales are the same size as those used for receiving so a full large carload is weighed with each hopperful. With wheat there are about as many drafts as there are 1300 bushel units in the shipment. The weighing is performed exactly the same as for receiving and has already been fully described.

If the ship takes all the grain which has gone into the shipping bins, they are examined by an elevator employee and a Government inspector to see that they are empty. This insures that the ship has received all that has been weighed out for it. If, as sometimes happens, the ship cannot take her full load, that which is left is re-elevated and weighed back into the house. The bins are then examined to see that they are empty. The amount weighed back is deducted from the total amount which was weighed into the shipping bins and the resulting weight of the cargo thus determined.

Trimming and inspecting cargoes—When the steamer ties up to the dock its holds have already been cleaned with scalding hot water by the crew. The water is so hot that it dries itself almost

immediately. "Trimmers," who are local men especially hired by the boat to load the cargo, then set the elevator spouts ready to properly discharge grain. Before a single bushel is allowed to run, a Government inspector stations himself where he can watch the running of the grain and can take an average sample of the shipment. This he does continuously during the loading, examining his sample as he takes it to check the work of the other two inspectors on the same stream, and preserving a large sample for future reference. It is this sample taken on board the boat on which the official grade certificate is issued. Before giving the grade, however, the Chief Deputy Inspector carefully compares this sample with the other two taken by the men within the building. You will notice that there are three inspectors working on this one stream of grain—one at the outlet of the storage bin, another some place on the elevation within the building and another at the ends of the spouts on the deck of the steamer. There may be a continuous stream for many hours if the boat is taking a large cargo. No one of them stops work until the cargo is finished. It is thus obvious that the final inspection must be as nearly accurate as human ingenuity can make it. No wonder it is accepted by foreign buyers, who usually insist upon samples.

Loading into cars—Practically the same procedure takes place in loading cars, except that the unit is so small that the use of the shipping bins is eliminated. Grain is drawn from the storage bins and weighed in the shipping scales just

as for cargo shipment. After weighing, instead of putting the grain into a shipping bin, it is spouted directly into the car which has been prepared and is standing on the track within the car shed. The force of the grain falling from the top of the building is sufficient to shoot it clear to the ends of the car. The process is therefore very rapid as little hand work is required. The grain is inspected with the same care as for cargo shipment to insure the accuracy of the final certificate.

Accuracy insured by Government supervision— Every step in the handling of grain by a public terminal elevator is supervised by Government officials. An inspector meets the cars as they come on to the elevator side track. An inspector watches the unloading of the cars. A Government weighmaster supervises the weighing and distribution into proper bins according to grade. Another inspector watches and checks all cleaning, or other treatment. An inspector watches grain as it is being drawn from stock bins for shipment. Another inspector watches the same stream of grain during its elevation. A Government official again weighs the grain. If it is loaded into ships it passes through shipping bins previously examined by a Government inspector. As the grain goes into the hold of the boat or into a car it is again sampled and inspected by a Government official. Finally if the grain has been loaded from a shipping bin a Government inspector examines the bins to see that they are empty, and if the ship is unable to take its full cargo, the Government weighmaster weighs back into the elevator the

grain which is left behind. It is difficult to conceive any closer or more accurate supervision than that which is given. It is even better than Government operation because the elevator has to take the responsibility of results, while at the same time the Government has full control over the process. With such comprehensive team work, it requires a most unusual combination of circumstances to permit any resulting error. If occasionally someone does slip up in his particular duty, it is almost invariably caught right on the spot. This system of Government control is what gives the high value to Government certificates of inspection and weight and Government registration of terminal warehouse receipts. No wonder these documents have practically the same standing in commercial channels as Government notes of the Dominion of Canada.

Advices of unloading—When cars of grain are ready for switching from the railway yards to a terminal elevator for unloading, the railway company prepares a list of the cars. This shows the car number, station of origin, kind of grain in the car, name and address of the person or firm to be notified of the unloading, also the rate of freight to be charged. This sheet goes to the office of the elevator company and does not go to the foreman in charge of the elevator. The only list appearing at the elevator is that received from the Inspection Department showing nothing but the grades and other inspection notations on each car. As the cars are unloaded elevator reports are made up showing car number, grade,

gross weight, dockage in both percentage and bushels, and net weight, all entered and figured according to the official weights and grades. These reports are sent to the elevator office which completes the records with the information received from the railway company. Freight is then figured on the weight of the grain at the rate advised by the railway company. This is the first time that the record on any one car becomes complete. An outturn is then written. This is an individual statement for each car, showing its number, date unloaded, station of origin, name of the firm to be advised in accordance with instructions received from the railway company, inspector's grade and dockage, gross weight in pounds, net weight and dockage in bushels, and charges against the car consisting of freight, inspection, weighing, and any other charge which the railway company reports. Fully itemized expense bills are received from the railway company, who has meantime obtained through the Inspection Department a report of the official weight of each car. These railway expense bills are checked against the elevator outturns. The Inspection Department has meantime written official weight certificates from its weighmaster's reports. These are delivered to the elevator office about the same time as it receives the railway expense bills. The proper weight certificate is then attached to its outturn and these documents are ready for the trade.

Practically all advices on cars read "Winnipeg" because the grain business is centralized in that city. All of the terminal elevators have offices

there and to facilitate delivery the outturns are sent to them daily. Here they are sorted according to the names of the firms and are distributed by messenger. All outturns ordered sent to outside addresses are of course posted in the mails.

An outturn constitutes a mere notice to the advisee that the car has been unloaded, showing weight and charges. The same firm has already received its inspection certificate when the car was graded in Winnipeg. It will then compare the inspection with the outturn to see that grade and dockage agree. It will then gather together the signed bill of lading, the outturn and the inspection and weight certificates. The documents on this car are now for the first time complete and the grain will command market value as it can now be sold for immediate shipment for export or milling consumption.

Warehouse receipts—You will notice there are four documents representing one car: (1) the bill of lading, (2) the inspection certificate issued in Winnipeg, (3) the elevator outturn, and (4) the official weight certificate issued in Fort William. It would be rather cumbersome to have to use all of these documents in trading. It is therefore customary under provisions of the Canada Grain Act to obtain for each car a warehouse receipt, which substitutes for all of the documents just enumerated. The receipts are lithographed on sensitive paper which immediately shows any erasure. They are a little larger in size than a bank cheque. They are written for full carload units and contain information showing kind of

grain, grade, net bushels, car number, date of unloading and name of the person or firm to whose order the grain is held. This person or firm is almost invariably the same one who received the inspection certificate and outturn. The receipts recite that the grain will be stored with other grain of like kind and quality, that it will be kept fully insured at all times, that it will be held to the order of the person whose name appears thereupon or his assignee, and that it is deliverable upon the return of the warehouse receipt properly endorsed, and tender of all charges accruing upon the grain represented thereby. These receipts are transferable by endorsement. They pass from hand to hand, frequently many times before they are eventually surrendered for shipment. They constitute a direct liability to the elevator company issuing them and as further evidence that they have been properly issued, thus giving them additional value, each receipt is officially registered by a Government official.

The registrar holds office under the Board of Grain Commissioners and works in conjunction with the Inspection Department. He receives from this department copies of their official unload reports, giving full notations of each car unloaded at each elevator every day. Each elevator office writes its warehouse receipts from its own records. It then lists the receipts according to serial numbers, showing grades and quantities, and submits the lists to the registrar with the receipts attached. The registrar then verifies each receipt from his official report of the unload. He then stamps each one across its face and certifies the

stamp with his signature with pen and ink. This certification shows the holder of the receipt that the Government has officially charged the elevator with its issuance and the unloading of the grain covered thereby. It further means that the terminal elevator cannot load out any part of such grain without surrendering the warehouse receipt therefor. As warehouse receipts must be officially registered for every bushel received and must then be cancelled for every bushel shipped, the certification of registration becomes a Government surety that each receipt truly represents the grain in store covered thereby.

A bill of lading is a transferable document. It passes readily from hand to hand by simple endorsement. A warehouse receipt is likewise a transferable document. There is a bill of lading and a warehouse receipt for the same grain. The former is written by the railway company when the car is loaded and the latter by the terminal elevator when the car is unloaded. It is obvious that there should be only one of these documents outstanding in the trade at the same time. Therefore before anybody can secure the warehouse receipt he must first surrender the bill of lading properly endorsed. As the warehouse receipt carries with it only elevation and storage charges in the elevator, and as there are owing cleaning and railroad charges, which latter are in turn paid to the railway company, the bill of lading must be accompanied by payment of these advance charges. The terminal elevator company then issues the warehouse receipt. This is the document used in delivering grain on sales. It is the only

document which can be used officially through the machinery of the Winnipeg Grain Exchange.

When grain is ordered shipped, the elevator naturally insists that the warehouse receipts therefor shall be surrendered properly endorsed. Elevator charges are paid as soon as they are determined and invoiced by the elevator. They cannot be tendered in advance as storage does not cease until the exact day of loading. The terminal elevator lists the receipts surrendered and sends them to the Government registrar for cancellation. This official passes them through his records, giving the elevator credit for them. He then conspicuously perforates them "cancelled" and returns them to the terminal elevator office. The company then completes its records by writing off these warehouse receipts against the shipment, cancels the documents on its own account and files them away for future reference.

Investment in terminals—Every bushel of capacity of public terminal elevators in Fort William and Port Arthur represents an investment of about fifty cents. This figure includes sites which are expensive as they have not only railway but deep water connection as well and are limited in available area. The buildings themselves are large and strong and the equipment and machinery is quite elaborate. There is now about forty and a half million bushels capacity. The investment is therefore substantially \$20,250,000. Adding to this a necessary amount for tools, supplies, office space and working capital, brings the investment up to \$22,000,000 or \$23,000,000. It is upon this large

amount that fair commercial profits must be made, otherwise the business would not attract sufficient capital to handle the immense volume of grain passing through.

Charges—As no public terminal elevator can own any grain, it cannot do a merchandising business. Its activities are restricted to public warehousing. To notify all shippers exactly what charges they may expect to pay, and to notify warehouse receipt holders what charges will accrue on shipment of grain represented by these receipts, all terminal elevator operators publish a complete tariff of charges, which lists everything necessary for the receiving, storage or treatment of grain and charges applicable thereto. The Grain Act requires that this tariff shall be filed with the Board of Grain Commissioners every year. It is considered by the Board about September 1st, just as the new crop begins to move. The Board always holds a public session to hear any criticism of the various items. After full discussion the Board then approves the tariff with such changes as may be considered advisable and the rates become effective for the next crop year.

It is apparent that with all the terminal elevators competing for business under the same conditions there can be no difference in rates. Therefore to simplify information and eliminate errors or misunderstandings a uniform tariff is adopted.

There are two principal charges: (1) three-quarters of one cent per bushel for receiving, cleaning, and shipping, including storage for the first fifteen days; and (2) the charge for storage

of one-thirtieth of one cent per bushel per day after the first fifteen. These two charges of necessity cover the grain from the day it is unloaded until the day it is shipped. They both include full insurance. All other charges are for special or unusual service in addition to the foregoing and apply only to grain which requires the special treatment or service provided for.

The charges for handling and storage compare very favorably with those in force at Duluth. The relation of terminals at Duluth to the north-western part of the United States is very similar to that of Fort William to Western Canada. At Duluth the charge for receiving, cleaning and shipping, including the first fifteen days' storage, is one cent per bushel, and the charge for storage for each day after the first fifteen is one-fortieth of one cent per bushel. As neither one of these rates includes insurance, the premium cost thereof plus the cost of attention and plus the value of the resulting security to the receipt holders must be added to these rates to make a fair comparison. It is impossible to figure this accurately, but it amounts to an appreciable sum for every bushel. As the Duluth handling charge is already a quarter of a cent higher than ours, any increase to include insurance would obviously make the difference that much greater. The Duluth rate for storage is only 1-120th of one cent per day less than our rate. This would amount to only 3 cents for a bushel in store for one year. Insurance for one year for one bushel of wheat worth \$1.00 would cost in premiums .15 cents to 2 cents, depending upon the insurance rate for the particular elevator

where the grain is stored. Adding to this the cost of attending to the insurance by the terminal elevators and the value of the security of always having full insurance, the very small difference in storage rate becomes absorbed. It is thus apparent that both of our rates are favorable to the Canadian business. There are also minor points of difference favorable to the Canadian trade, such as return of screenings. No screenings whatsoever are returned to shippers in Duluth, whereas large quantities of considerable value are returned to the shippers in Canada.

In both places the tariffs of charges have been repeatedly investigated and approved by the public commissions having jurisdiction.

Reverting to consideration of Canadian charges, where grain carries only straight dockage for dirt all necessary cleaning is covered by the elevation charge, except in case of wheat with dockage of five per cent. or more when an additional charge of half a cent per bushel is made. But in return for this charge, after deducting one and one-half per cent. of the gross weight for waste, warehouse receipts are given for the balance of the screenings. That is, where there is sufficient dockage, screenings from wheat will be returned at a minimum of three and one-half per cent. of the gross weight and at a maximum of the entire dockage less only one and one-half per cent. No additional charge is made for cleaning flax and no screenings are returned. With the same percentages of dockage, the cleaning of flax is much slower than wheat. But flax dockage is invariably of higher percentage than wheat dockage, and this delays the cleaning

that much more. Even with the retention of all flax screenings it is very doubtful if the compensation is sufficient to cover expenses.

On grain containing other grain of commercial value where a separation is made to extract such other grain, there is an additional charge of one cent for the first separation, and another cent for each subsequent separation computed on the remaining mixture in each case. This extra charge is made because the work has to be especially done and the process is slow. Each car has to be handled separately and this ties up a cleaning bin and a large cleaning machine until the particular car is finished. Of course in return for the extra expense the shipper gets a warehouse receipt for the commercial grain which was cleaned out.

Sometimes various grains are so mixed together that it is impossible to make a commercial separation. In this case the mixture is handled as it is received. The charges, both for handling and storage, are based upon the hundredweight instead of the bushel. They are one and one-half cents and two-thirtieths of a cent per hundred pounds respectively. They will be seen to be exactly the same as the average rate for similar service per bushel for wheat, oats, barley and flax, each figured at the legal weight, therefore the charge is merely the result of a different method of computation.

For drying tough grain the charge is one and one-half cents per bushel, and for drying damp or wet grain the charge is four cents per bushel. These charges may seem high as the actual service

could probably be performed for less money. But when allowance is made for all of the years when crops are in good condition and no drying is necessary, the charge is really very small. A commercial drying plant costs \$20,000 to \$25,000. It is expensive to maintain. It must be kept in condition regardless of the fact that for long periods it does no business whatsoever. Experience has shown that only about one year in five is there any appreciable portion of our crop tough or damp. This means, therefore, that to secure the establishment of drying plants to take care of the occasional bad crop, the rate must be high enough to produce a reasonable return on the investment for the five years when operating only one.

There is a charge for elevating and storing screenings of two cents and one-tenth of a cent respectively per hundred pounds which is slightly higher than the similar charge for grain because of their greater bulk and their liability of heating which requires constant attention and turning.

There is a charge for removing bulkheads from partitioned cars of \$3.00 for each bulkhead. This is a straight elevator charge and has nothing to do with the additional freight assessed by the railways. If merely removal of the boards constituting the bulkhead were the only expense involved, this charge would undoubtedly be too high. But a bulkhead breaks the carload unit. Each part of the car must be unloaded separately, elevated separately and weighed separately, consuming substantially the same time as if they were full carloads instead of only parts of the same car.

This delays to exactly the same extent all of the other cars being unloaded at the same time. An elevator is so designed that it will unload all of the cars spotted at once in about the same interval. The next cars cannot be started until all of these cars are empty. Thus the entire string can be completed no faster than the slowest car. Accordingly, the delay on any one car is automatically and necessarily multiplied by the total number of cars which are being unloaded at that time. This penalizes efficient and modern construction. It is self-evident that the more cars an elevator can unload at once, the cheaper is its operation. Therefore the best equipped and most modern elevator is penalized the heaviest whenever a bulkhead car turns up. This is bad enough when the car contains only one partition. It is of course just that much worse if there is more than one bulkhead, as sometimes happens.

There is a charge for preparing cars for flax shipment. This is paid by the exporter or the buyer of grain for shipment east of the terminals. Flax is almost as elusive as water. It will run through cracks which cannot be discovered by reasonable examination. To make a car flax-tight it is good business to completely line its interior with cloth or paper so that every crack and crevice is completely sealed over. This service was instituted several years ago at the request of the exporters. A fair charge of \$2.00 was struck, which they were very willing to pay. Under this practice loss of flax in all-rail shipments has practically disappeared. Since the net result

is a saving to the buyer of flax, it indirectly reacts in favor of the farmer.

Grain must be in good condition—Under the provisions of the Canada Grain Act a public terminal elevator is required to receive without discrimination only grain which is in good condition and fit for warehousing. This is only fair as it would create an impossible situation if a terminal elevator were compelled to take in all grain which might be presented regardless of its condition or keeping qualities and at rates based upon dry grain thoroughly fit for warehousing. There is therefore a clause in the tariffs stipulating that all tough, damp, condemned, heating, heated, or fire-burnt grain may always be refused. If received and stored it will only be under special contract and will always be at owner's risk of deterioration. This is really but a condensed statement of the terms of the Grain Act and is only published to call the attention of shippers to conditions which might be easily overlooked.

Allowance invisible waste—There has always been a custom in the trade that any elevator or mill receiving grain from point of initial shipment is entitled to a small allowance per car for invisible waste. To anyone who has seen grain handled in bulk and the clouds of dust arising therefrom, it is quite evident that everywhere in the process there must be considerable loss in weight. Accordingly there is printed in the tariff a clause that on all grain received deduction to cover

invisible loss will be made per car as follows: wheat, 30 pounds; flax, 28 pounds; oats, 50 pounds; and barley, 50 pounds. This has been decided by the Grain Commission to be a fair allowance and this deduction is made by the Government before writing the official weight certificate.

Moisture shrinkage—In considering the matter of weights in and out, if grain were merely shipped in the same state as received, inevitable discrepancies due to handling such large quantities in bulk might be greatly minimized after making a small deduction for waste. In the case of our large public terminal elevators, however, grain is never simply received and shipped. Most of it requires cleaning or treatment, and frequently there is the question of condition or excessive moisture to be considered. Three years ago we had a wet crop. Much of the grain had to be received, stored and shipped in its tough or damp condition to use it at all, as the capacity of all available driers was totally inadequate to meet the situation. Conditions surrounding the handling of this grain were so new and the results thereof were so unknown that some reasonable protection was considered necessary. Tests showed that the actual shrinkage amounted to from one-half per cent. to as much as three per cent., depending upon the amount of moisture contained and the length of time in store. A conservative average of one per cent. was therefore struck as a fair estimate of shrinkage. Deduction on this basis was made for two years and clauses to that effect were published in the tariffs. It was

subsequently found, however, that apparently the shrinkage was not as much as tests had shown could reasonably be expected. Accordingly the terminal elevators withdrew this deduction for shrinkage in the tariff filed for the year commencing September 1, 1914. This is in favor of the country shippers as it insures them the full unload weight of their cars, regardless of what the shipping weight of the same grain may be when export is made.

Cleaning for dockage—Dockage is set by the inspector as all foreign matter which is cleaned out of the grain by passing it through and over sieves of legal sized mesh as prescribed by the Canada Grain Act. The same process is followed in cleaning the grain in terminal elevators; that is, the dockage taken out is that obtained after passing the grain through and over sieves of the same mesh as used by the inspector in setting the dockage. Other intermediate sieves may be used to assist in the process, but the screens which finally determine the dockage removed are those sieves of standard mesh.

All kernels of grain are not full size. Some are naturally undersized and others are broken during threshing. If there is not too large a percentage of small or broken grain and if there is no dirt to require cleaning the small kernels are passed by the inspector and go into the straight grade grain. If, however, there is too much small grain, or cleaning is necessary, then these small kernels become part of the dockage and are lost because they will pass through the standard

mesh sieves. In wheat if there is enough of the small grain, most of it is accounted to the owner by giving him a warehouse receipt therefor under the provisions for return of screenings. If not enough for this, the small grain goes to the benefit of the elevator.

It is usually impossible to preserve the identity of the dockage of any particular car because all grain is handled in bulk and in such large volume. It is thus impossible to ascertain in commercial cleaning either the quantity or quality of any particular dockage. Therefore whenever returns are made they are always based on the inspection and if no appreciable quantity of good grain is determined on grading no return can be made.

Where no other grain of commercial value is contained grain may be well cleaned with only one passage over the machines if the cleaning is heavily done. This removes much good grain with the screenings. As this is the practice of all terminal elevators it becomes necessary to re-clean the dockage to remove the good grain which is then officially graded and put into stock bins. Of course much of this belongs to the original grain, but since there is always a little small grain in the dockage which is not accounted for and which is good enough to go into the straight grades, there will be a steady accumulation to the benefit of the elevator.

The higher grades must be cleaner for the trade than the lower grades so they are inspected and cleaned more severely. Because of the rigid inspection and cleaning in the higher grades larger quantities of good grain appear in their

screenings than in the lower grades. Therefore the greater proportion of grain eventually cleaned from the dockage and accruing to the benefit of the elevator is in the higher grades. This accumulation varies in amount and grade, depending upon the nature and grade of the crop. A high grade crop requiring lots of cleaning and containing a large percentage of small or broken kernels will invariably cause a considerable accumulation in the higher grades.

Overages—Every year actual stocks are compared with outstanding warehouse receipts. This is done for each grade separately. There will be an overage or shortage in every grade. The terminal must make good all shortages and as it has issued no warehouse receipts for any overages it may keep the net excess. Sometimes there is a net shortage and the year's operation may prove very costly.

It is the process of recovering good grain in very minute quantities from the screenings that makes the overage. By the time grain is shipped there is nothing left of the small allowance per car for invisible waste. Of course during the past three years there has been the contributing factor of one per cent. deduction on tough and damp grain. This, however, has now been voluntarily withdrawn by the terminals and has no further effect. It must be borne in mind that the Government grades in and out, weighs in and out, supervises the cleaning, drying, binning and all other operations of a terminal elevator and that at no time in the process does any terminal have the chance,

even if it so desired, to do anything irregular which could add to its overage. The final showing is but the inevitable result of handling such large quantities of grain in bulk and it is only fair that all incidental benefit accruing from differences in weight due to such operation shall be for the benefit of the elevator as it must assume all responsibility for shortages. If it were argued that such overage does not belong to the elevator it would have to be admitted that the elevator should be relieved from responsibility in case of shortage.

Screenings output—In a normal year about 25,000 to 30,000 tons of screenings are shipped from the terminal elevators at Fort William and Port Arthur. A large part of these have been bought from the farmers or country shippers who have received warehouse receipts against dockage in wheat shipped by them. These screenings are divided generally into two classes—the better class called “scalpings” and the poorer class called “rough screenings.” Practically all of both kinds go into the United States, where the better class is used for chicken feed and the poorer class is manufactured into prepared stock food.

In a normal year the screenings will consist almost entirely of the rough class. As scalpings are a product of wheat screenings it is only in years when the wheat crop contains a considerable percentage of shrunken and broken kernels that there is any quantity of the better class. We have seen that the first break of screenings from

the cleaning machines contains all the dirt, all of the broken and shrunken kernels if there are any, and a considerable quantity of good grain. We have seen also that this first break of screenings is then recleaned to recover the commercial grain. The better grade of final screenings therefore can contain only grain which is so small that it cannot profitably be cleaned up to take a recognized grade. Probably not more than ten or fifteen per cent. of the entire output of screenings will come under the scalpings class.

By regulation of the Board of Grain Commissioners, scalpings cannot contain more than twenty-five per cent. of commercial grain. Anything richer than that will be graded and docked for the dirt contained therein. Thus for instance a product which might be called "scalpings" with forty per cent. wheat would actually be graded wheat with sixty per cent. dockage, taking whatever grade the grain itself would carry. As such grain is always of poor quality and light weight it would usually be graded No. 6 and perhaps Feed in those years when there is a Feed grade. The ordinary composition of scalpings therefore is about twenty-five per cent. of small and broken wheat, the balance being made up of buckwheat and heavier weed seeds with a small percentage of poor oats.

Rough screenings are always what remains after everything of any higher value has been removed. They will therefore consist of straw, chaff and other refuse, the smaller and lighter weed seeds and a very small quantity of finely broken commercial grain.

Multiplicity of grades reduces capacity—There are more separate grades of grain than there are bins in a large terminal elevator. As the identity of each grade is carefully preserved under our inspection system, it is apparent that even if a terminal receives only a comparatively few of the many grades its working space may be greatly reduced as the different bins may not be completely filled. In practice an elevator is frequently blocked when it still has available space. This is due to the fact that the bins for the grades offered are completely filled and no grades are offered for those bins partially filled. This condition normally results in a waste of from twenty to twenty-five per cent. of capacity. This materially reduces the revenue to the elevator.

- Depreciation of investment rapid—Depreciation on terminals is high, not only because of physical deterioration, but because of changes in the methods of handling grain, thus rendering plants which are today up to date and thoroughly modern obsolete and unprofitable in a few years. From an operating standpoint, elevators built ten years ago in Fort William are not as profitable as those just completed, and yet they were perfect models of construction according to the best knowledge and advice obtainable when they were built. In the United States where the trade is older, elevators have never been abandoned because they become physically unworkable, but they have been abandoned, and many hundreds of thousands of dollars' worth of investment wasted, because improvements in construction or process

have made them unprofitable. In fact, experience seems to indicate that probably twenty-five years is the commercial life of a large elevator. During this time of course many expenditures must be made to keep the plant and machinery in first class working order, and probably at the end of that time the plant will be as good mechanically as when it was built. The risk of depreciation cannot be overlooked in considering a fair measure of profit.

Hospital elevators—Mention was made in chapter on inspection of some small private elevators in which mixing is permitted. These are designated "hospital" elevators in the Grain Act. They buy all the grain they receive so they are not public terminal elevators in any sense and they are therefore not permitted to do business for others. Because the grain is their own they are permitted to mix, but their product must be well up to the average to receive the desired grade.

They are profitable because of the right of selection. They are nominally buying on the basis of grades, but actually as far as possible they examine the samples of cars as they pass Winnipeg and select only those which will best suit their purpose. This somewhat approaches the elements of a sample market. As many of them buy no grain for shipment direct to their elevators, their cars are not billed to them. This necessitates the surrender of the bills of lading to the railway companies to secure diversion of the cars from elevators of original destination. To make the sales attractive under these conditions, it has

become customary to pay premiums. This, of course, sets the price for all as competition compels those who buy for direct shipment to pay the same as those who buy for diversion in transit. The ordinary price in store has already been stiffened by the competition of these hospital elevators. The premium mentioned is therefore an additional increase. Their competition is now quite a factor in the market. Although they do not handle any great portion of the entire crop, at the same time they are taking a substantial amount every day and the demand from them is thus very steady.

Every hospital elevator has a Government weighmaster and inspector, and all receipts and shipments are officially weighed and inspected. Shippers to or from these elevators therefore have the same protection as when dealing with public terminals.

Investment in hospitals—It costs about fifty cents a bushel to build these hospital elevators. They have to purchase their property and are built in somewhat the same manner as large public terminals except of course they are on a smaller scale. They vary in size from 10,000 to 180,000 bushels capacity. The capacity of all such elevators at Fort William and Port Arthur is about 1,150,000 bushels. There are also two others in Winnipeg. The total capacity, both at the lake-front and Winnipeg, is about 1,425,000 bushels, which, valued at fifty cents a bushel, represents an investment of \$712,500. It requires considerable capital to run this business as all of the grain must be

purchased outright. Probably working capital and other investment equals fifty per cent. of the value of the plant and property. Therefore the total amount invested in the business is about \$1,100,000. This is a sufficiently large figure to show that the business is well grounded.

Government interior terminals — The word "terminal" elevator as used by the Grain Act applies to an elevator in the Western Inspection Division, which need not necessarily be at the end of a railway. The point where it is located is constituted a terminal by an order-in-council of the Dominion of Canada. It may be any place, either at the lake-front, the seaboard or inland. It may be at the end or in the middle of any railway. It is purely an arbitrary distinction for the purpose of establishing the legal status of the elevators which may be used at that place for the transferring of grain. We have public terminal elevators in the interior. They are public elevators because they handle grain only for others under the terms and conditions prescribed by the Grain Act, and they are terminals because the Governor-in-Council has declared them such. We now have two of them completed, one at Moose Jaw and the other at Saskatoon. They belong to the Dominion Government and are operated directly by the Board of Grain Commissioners. The Government also owns and operates through the Grain Commission a terminal elevator in Port Arthur, which is no different from the type already described. The interior terminals, however, present some considerations totally different

from the elevators at Fort William and Port Arthur.

How well they will meet the expectations of those who asked for their erection will depend largely upon the object sought. The popular demand several years ago was apparently based upon the desire that they replace, to a large extent at least, the terminal elevators at Fort William and Port Arthur, which were believed to have a monopoly of their particular service.

Fort William a real terminal—A public terminal elevator situated at any convenient place where lines of commerce converge, where bulk is broken and commodities are transferred in quantity is really in every sense a terminal elevator and has a high economic and commercial value because of its great usefulness. Just now the only place where this is found in Western Canada is at the twin port, Fort William and Port Arthur, where all of our principal lines of railway converge to meet the water transportation and to take advantage of the geographical contour of our country. Here, therefore, practically all of our grain and other commodities are transferred from cars to boats or from boats to cars. Ample grain storage must be provided as a reservoir to compensate for inequality of shipment by railway and by boat. Also the location of the port is convenient for the purchase and sale of grain stored in its elevators. It offers a natural transfer point for delivery of grain from local to foreign merchants. Its prominence is not due to any work of man except as natural location and advantages have been utilized and

developed in our national commerce. We have now only this one trade route across Canada. Other places of similar economic importance may develop in the future as trade channels change or new ones appear. Possibly in time Vancouver will attain somewhat the same or perhaps equal importance as a grain handling port, due to the Panama Canal.

Doubtful value interior terminals—It has been pointed out that grain has no commercial value except as it is in position to be consumed or to be forwarded immediately for consumption. Grain in any considerable quantity west of Fort William has no commercial value because there is no local demand for consumption except in very limited amounts. Thus there can be no interior market of any importance. The very largest of these must be relatively insignificant compared to the broad market for grain in store Fort William or Port Arthur and its economic value must be practically nothing considering our grain crop as a whole. When a farmer puts his grain in a car at a country station for shipment to market, it is obvious that the most valuable market should be made the destination of that car. Such destination is now Fort William or Port Arthur, and will be until other trade centres are developed at some future time. The building of elevators does not make markets. Elevators in the interior, although they are called terminal, can never have the value that elevators have in Fort William because they have not the same usefulness. There is no magic in the elevators

at Fort William and grain does not derive its value from the simple fact that it goes into store therein. They are merely an incidental necessity in the transportation and handling of grain. The fact that the grain has value when it gets to one of those elevators is because it is then for the first time in commercial position for consumption or immediate forwarding to final consuming market. These qualities cannot be transferred from Fort William by merely building elevators elsewhere.

Considerable weight has been attached to the value of interior terminals in relieving car shortages but this is extremely doubtful as their capacity is so small that they would all be filled in one week during the busy season. They may give relief to a few stations but such results can be of small general value in a big crop when there is a serious car shortage. Their only commercial outlet is to reload the grain into cars. When a car is loaded the first time it is far better to ship it immediately to its ultimate destination rather than relay its contents through an elevator and a second car. When a shipper has once waited for his car on the car order book why should he again go through the long delay to secure another car for completion of the journey already started, and incidentally pay the Government for the privilege?

The interior terminals will have some value as storage for interior mills, transfer points for future divergence to other trade routes if anything comes of the Hudson's Bay route and when the Panama Canal becomes a factor commercially, and on occasion such as this year for temporary storage

of seed grain in quantity. They also provide additional drying capacity which will be useful in wet crop seasons. To this extent they will be valuable to the community and experience only will show whether or not this is sufficient justification for their erection.

Licenses and bonds—All terminal elevators, both public and private, are licensed by the Board of Grain Commissioners. They cannot operate without such licenses and cannot obtain them without first filing large surety bonds guaranteeing their financial responsibilities. As the licenses are revocable upon violation of the law or regulations of the Commission or cancellation of or default under the bond, the public is well protected against irregular or irresponsible operation. This adds to the value of these elevators in the trade.

{The following account of
the Winnipeg Grain Exchange
and how grain is marketed is
from C.B. Pipers recent book on

~~CHAPTER VI.~~

~~THE GRAIN EXCHANGE AND THE~~

~~MARKETING OF GRAIN~~

"Principles of the Grain Trade";-

~~Conditions necessary to give grain commercial~~
~~value~~ {An economic market for grain can occur

only where there is sufficient volume to attract a large number of buyers and sellers. There must be storehouses in a commercial centre and facilities for making deliveries on contracts. There must be standards of quality and weight so that price and total value may be determined. Not until these conditions are fulfilled can grain have commercial value. In our Western Canadian practice this point is reached only when grain has gone into store in the public terminal elevators at Fort William and Port Arthur. It then becomes a commercial commodity and is extensively dealt in on the market established by the Winnipeg Grain Exchange. There are some consuming markets in the West but their values are always based on Fort William. Although country elevators buy for cash in the country, their purchasing constitutes only a secondary market. They are governed by the conditions of the Grain Exchange as they there re-sell all that they buy.

{Function of Grain Exchange} We have seen that Canada's market for grain is in England and Europe. The nearby medium for connection

between the western farmers and the foreign buyers is the Winnipeg Grain Exchange. It constitutes what is known as a primary market because it deals in grain direct from the producers. The prices paid on this Exchange are dependent upon those paid by the consumer in England and Europe. The values on the foreign markets less cost of transportation, insurance, expenses and profits to dealers, determine the prices in store Fort William and Port Arthur which are the prices quoted on the Winnipeg Exchange. Again deducting from prices of the Winnipeg Exchange elevator charges, the cost of transportation to Fort William, expenses and profits to the dealers, we find the prices payable at any country point. The transportation charge, including elevator service, is inevitable as grain must be shipped to market and the methods now used have been found by experience to be the cheapest. Sometimes it is said that the dealers' expenses and profits should be eliminated. This has been tried again and again, but until somebody devises a new economic structure it will be impossible to commercially handle the business without their assistance. These men perform a service of distinct economic value to the community. Grain is produced in comparatively small units. The standard in Canada is a carload, but a large portion of our crop is produced in units of even smaller size. The service rendered consists in building and operating a system for the collection of these small units of production, thus utilizing for the economic benefit of the community the properties inherent in grain which enable it to be handled cheaply in bulk and by mechanical

appliances. The Grain Exchange itself provides a large public market for the commercial purchase and sale of grain, the efficiency of whose services increase to a large extent with the size of the units dealt in. It is the economy resulting from centralization and concentration of these small and widely distributed units which justifies and necessitates the middlemen. Imagine the confusion and costliness if every individual farmer tried to find an ultimate consumer to whom he could sell and ship his grain. No farmer would have either the time or the experience. It is far cheaper for him to pay somebody else to do this for him. The small charge is more than made up in the increased price received through efficient market organization and the saving effected by handling grain in quantity.

{*Fort William natural market*}—We have seen that because of the geography of our country and the resulting location of our principal trade routes the natural point of delivery for the purchasing and selling of grain in quantity is Fort William or Port Arthur. It would be logically expected therefore to find in either or both of those twin cities a large exchange which would deal in grain stored there. However, the same geographical situation which makes them such large centres of commerce makes it impracticable to operate the grain business as a whole from there. This is due to the fact that the country is unproductive for 400 miles immediately west of those two cities and that the grain fields lie entirely west of this 400 mile strip. Because of the time consumed in

transit of mail it would be impossible to operate the entire trade as effectively from there as from a point nearer the grain fields.

[*Why Exchange is ~~located~~ at Winnipeg*] Winnipeg is a large metropolis and railway centre conveniently located between the grain fields and the lake-front. It is easier to bring the concentrated portion of the business from Fort William and Port Arthur to Winnipeg than it is to bring the divergent and extended portion of the business from the grain fields in the west to Fort William. The farmers or producers are of course the primary sellers and appear in large numbers, while the buyers are comparatively few. It is therefore more convenient to be in the vicinity of the sellers especially as the buyers can operate with relatively slight inconvenience at a distance from the terminal elevators. We therefore find the peculiar situation and the only one in the world where a very large public market for dealing in grain is situated 400 miles away from the warehouses or elevators where the grain itself is stored for delivery on sales.

[*Nature of Exchange organization*] Any grain exchange is merely an association of grain dealers whose objects are to secure information, provide a suitable meeting place, and to establish and maintain reasonable and proper terms and regulations for the prompt and efficient making and performance of contracts. The exchange itself never buys or sells any grain. It is not concerned in values. It is nothing more or less than a

farmers' produce market on a large scale and with more elaborate machinery.

[*Elaborate machinery necessary*]—Its intricacy is rendered necessary by the large volume of business and the speed with which it has to be handled.

Trades involving millions of bushels are made verbally and evidenced at the time by the very briefest memoranda upon cards. There is no time for written contracts at the moment. Subsequently these notations are written out in full and confirmations are exchanged between buyer and seller. The problem would not be difficult if all of the trades were for spot or immediate delivery. The introduction of the various futures for each of the different grains necessitates much closer attention to details and more elaborate machinery for their rapid handling.

[*Exchange is an open market*]—Every exchange or market is but the meeting place of buyer and seller. The prices at which they make contracts are the established quotations on that market. They fluctuate from hour to hour, from day to day, and from week to week, according to the supply and demand of the commodity itself and the factors of transportations and finance. All of these are part and parcel of the business and are constantly operating to make fair values. The sellers on the Winnipeg Exchange include the elevator companies, farmers' associations and commission men, all of whom are acting on behalf of the producer. The buyers include Canadian millers and exporters selling to the

English or European mills, either direct or through other grain exchanges, all of whom represent the consumer. It is difficult to conceive any situation where true competitive prices could be more fairly established. All of this is done under the auspices of the Exchange organization which furnishes comprehensive information to its members and then posts as the fair value at the moment the prices agreed upon between seller and buyer. There is absolutely nothing secret. The trading room is open to the public. Quotations are publicly posted, the only restriction being the very reasonable one prohibiting their unauthorized use to the detriment of the Exchange members or the public.

[*Regulation of members*]—The entire system would fail if there were not the highest integrity among the members. Because so much of the trade is based upon verbal contracts made with astonishing rapidity and frequency, situations constantly arise which could be taken advantage of by unscrupulous traders. To guard against this, applications for membership are very carefully scrutinized and where there is any reasonable doubt of the high character of the applicant he is not admitted. When any member fails to carry out his contracts for any reason whatsoever, he is barred from dealing on the Exchange. If any member violates any of the established rules or regulations, he is disciplined even to the extent of expulsion. Most exchanges contain a rule that any member practicing what may be considered uncommercial conduct and which may not be definitely covered

by any specific rule or regulation, may be disciplined even to the extent of expulsion. In other words, every exchange exercises absolute control over the actions of its members in dealings upon the exchange, and if any member does anything which discredits other members or the exchange as a body, the offending member is brought into line or disciplined by suspension or expulsion. This all acts as a protection to customers of the exchange members because they have the assurance that their trades are being properly carried out along lines which have been established for the protection of their interests. The membership of the Winnipeg Exchange includes not only the grain dealers but many farmers and farmers' organizations, bankers, railroad officials and other men in different lines of business. It is therefore a very representative body and its rules and government may be said to reflect ideas which have been thoroughly established by broad lines of general commerce.

The Commission rule—All exchanges for every commodity have rules defining the rates to be charged for the sale of the commodity dealt in. On the Winnipeg Grain Exchange the charge is one cent per bushel for all grains, except oats, the charge for which is five-eighths of a cent per bushel. Such rule has been attacked here and elsewhere on the grounds that the specified charges are excessive and that the enforcement of the rule constitutes combination in restraint of trade. The rule has been generally upheld. It was held by the courts of Canada that the old charges

of one cent for all grains were not excessive and that enforcement of the rule was not unreasonable restraint of trade. Experience has demonstrated that an average amount of business cannot be done profitably at less commission and the fact that the same fixed rate is charged every customer simply removes all chance for discrimination and enables the seller to figure in advance just what his selling charge will be, both features being highly desirable to the selling community. Another important advantage of a uniform rate is that it compels keen competition in service.

If members were permitted to charge commission less than a fairly remunerative rate there would be a temptation to dishonestly take something more to make the business profitable. When, however, the rate is sufficient to return a fair profit for the service rendered, the temptation of dishonesty is removed. Of course where an unusually large volume of business is done the commission could undoubtedly be reduced and still show a profit. However, there are only one or two members of any exchange who handle grain in sufficient quantities to warrant such reduction. Basing the general charge upon the business of only one or two would not be fair to other members of the exchange. Any reduction would drive them out of business which at once would introduce monopoly in that the one or two big firms would be the only ones left and would therefore handle all of the business. But this is highly obnoxious and contrary to the principles of competition upon which all exchanges are based. It is therefore necessary to make the commission rate sufficiently large so that a

fair number of traders doing an average business can afford to operate. The greater the competition of both sellers and buyers the more fair and just become the prices and the more efficient becomes the service.

[How Prices of grain vary] with delivery requirements—

The present cash value of spot grain of standard grade on the ultimate consuming market is the basis of all prices. Based on this price are other spot prices for different grades. The differences in the prices for the different grades are fairly uniform in any crop year because whenever they become greater than the differences in the intrinsic values the lower grades at the relatively cheaper prices will be substituted for the higher grades at the higher prices. This but follows the economic law of substitution.

Based also on the cash value for spot grain of standard grade are prices for the same grade deliverable in stipulated future months. These future prices for the standard grade in turn fix prices of inferior grades for delivery in the same future months. For convenience, future prices are usually quoted for delivery at monthly intervals during the year, thus establishing four "active" trading months. The other eight months are called "inactive." As a rule, trades for inactive months are based upon the prices of the active months nearest in the future, although special contracts are sometimes made upon prices fixed for the inactive months. The designation of the particular active months may vary slightly with conditions governing the large markets,

as, for instance, the period of inland navigation on this continent. Then, too, in Canada the lateness of harvest as compared with the United States has a determining influence upon the designation of the first active trading month of the new crop upon the Winnipeg Grain Exchange. Thus, in Chicago and Minneapolis we find September, December, May and July the active trading months. In Winnipeg we find them to be October, December, May and July.

~~Present~~ *position of grain determines price*—The present position of grain has a vital effect upon its price. In our practice there are four different positions: (1) actually in store in Fort William or Port Arthur and ready for spot delivery on a cash sale; (2) past Winnipeg inspection and thus near the terminal; (3) loaded into a car and standing on track at a country station thus ready for movement and depending only upon the action of the railway to get it to the terminal; (4) in a country elevator, where there is considerable risk as to when a car can be procured for shipment. Deliveries from all of these different positions are separated by an appreciable difference in time, so much so that there is a separate price for each of the different deliveries. Therefore grain in any one of these positions can only be worth the price for expected time of delivery. If there is uncertainty as to transportation facilities, grain not yet loaded must be given generous time for arrival at terminal. Thus a car shortage will have a very disturbing effect upon prices in the country.

Almost every year the following situation arises about the end of September: Prices at any one

time are in a descending scale according to futurity of delivery until the close of navigation, the highest being present cash value and the lowest that for delivery in December. Grain in store at the terminals of course commands the highest cash price: October is the next calendar month and also the next active trading month, therefore quotation for October delivery is a little lower than cash value. Grain already past inspection which would reach Fort William in two or three days may command a premium over the October price because of the probability of early delivery, but grain on track at a country point or not yet past inspection could not be expected to reach Fort William before the end of the month and would only command October price. If there is a serious car shortage, shipments of grain in store in country elevators could not be counted upon with any certainty and commercial prudence would dictate that ample time allowance for transit would have to be made. Since grain on track could not be counted upon for delivery before the end of October, grain not yet loaded could not be counted safely to arrive at Fort William much before the close of navigation, the first week in December. Therefore at those places which are badly congested and where there is no prospect of relief the street price would at once go out to a December basis, which is the value for closed navigation and is low enough to allow all-rail transportation east of Fort William. This explains why there may sometimes be such wide spreads between the street prices offered by elevators at that time of the year for grain in

wagon load and prices sometimes realized by farmers who are fortunate enough to secure cars for immediate shipment. There have been occasions at the end of September when the differences in street prices and cash prices in Fort William have been ten to fifteen cents for medium or lower grades of wheat. It is clear after examining the factors relating thereto that the elevator companies cannot help themselves, as to pay any higher prices would mean that they would lose money. *[Three prices quoted]*

Grain past inspection seldom has any higher value than grain loaded on track and hence separate price for it is seldom sent into the country. As a rule, therefore, there are three prices to the country: (1) the cash price sent out by commission men indicating the net value less commission for spot grain in store Fort William or Port Arthur; (2) the track price sent out by track buyers and elevator companies which is the net price less commission for grain actually loaded into cars and all ready to be hauled to Fort William; and (3) the street price, which is the highest net price payable for grain delivered to elevators by the wagon load and which must take its chance for shipment, depending upon cars available. Each price represents the fair value as fixed by the factors of the trade prevailing for estimated time of arrival at market and determined in actual transactions for such delivery. That the prices are uniform all over the country is but an indication of the sharp competition and that every man is paying just as much as he possibly can under the conditions of the market at that time.

~~Theory of~~ {trading in futures} The principle underlying trading for delivery in future months is as follows:

Bakers or large consumers who use flour in quantity like to buy for requirements some time ahead, but they want to take delivery of and pay for only a little at a time to take care of immediate needs. This method economizes both storage space and working capital. A common procedure is to buy a year's supply, stipulating delivery and payment at quarterly periods. The millers naturally desire to meet the wishes of their customers but before they can make definite sales they must see that they can buy enough wheat to fulfil the contracts. They also desire to put off taking delivery and making payment until the wheat is needed so as to conserve their storage space and working capital. They therefore find sellers who will make present sales at fixed prices for future delivery and payment. With knowledge that they can so buy wheat at definite prices they can then quote prices for flour to their customers for different deliveries and upon making such sales can immediately protect themselves by purchasing the required amount of wheat on a similar basis. It is this simple procedure which in practice establishes our big markets for the different future deliveries.

On the other hand, it would not be wise to sell all of a crop at once, even if it could be transported and delivered immediately. By offering it as the buyer needs it the price is much better maintained. As it has to be stored somewhere until consumption it is economical to store it in small units near the

fields of production and then to efficiently utilize transportation facilities by shipping steadily at about the rate of consumption. It is therefore desirable for producers or owners to be able to sell at definite prices for delivery in the future when it is convenient to ship. The establishment of quotations for different deliveries enables the sellers to select sales which show them the greatest profit.

The whole system is thus both a convenience and a necessity to both producers and consumers. Through it the entire trade is simplified, prices are stabilized, economy of capital, both fixed and liquid, is secured, and the necessary assistance by financial agencies is made effective and cheap.

[What is a "future"?) When a cash trade is made it involves the transfer of and payment for some particular grain as shown by warehouse receipts delivered. When a future trade is made no particular parcel of grain is covered. The trade only involves an obligation to deliver and to receive a definite amount of proper grade at a specified time and at a fixed price. Any parcel of grain of that grade may be delivered. Because only an obligation or contract and not the actual grain itself is traded in, it is unnecessary to have the grain in hand when selling it.

Because the future trading involves only obligations, the rules of the Grain Exchange do not require any cash payments between buyers and sellers at the time the contracts are made. Instead of this, the rules require daily cash settlements according to market fluctuations. Thus,

if X buys future wheat from Y and the price goes down X loses and Y profits, and X pays Y every day the full amount. On the other hand, if the price goes up, then X gains and Y loses, and Y pays X every day the full amount. Thus the money representing fluctuations is paid back and forth every day and the differences are reduced to zero.

Although these future trades involve only contracts or obligations, they are definite in their terms and may be freely dealt with. One may buy or sell and then sell or buy again before delivery time, thus cancelling the obligation. Futures may be "switched" from one delivery time to another by simply selling or buying the one future and then buying or selling the other.

The system of trading in futures is the result of the necessity of the millers to buy wheat to fill flour contracts sold ahead. Producers or sellers use it to sell at the various prices for corresponding deliveries to obtain better prices or to suit the convenience of deliveries. Its purpose is therefore sound as it is founded on the requirements of commerce. It is true that it provides an easy opportunity for speculation or gambling, but the Grain Exchange must not be blamed if its commercial uses are twisted to meet the desires of speculators. Any blame must be put upon the shoulders of those who use it for that purpose.

[Speculation outside the trade] The institution of trading for the various futures simply multiplies the chances for fluctuations over extended periods due to laws of supply and demand and other contributing factors of value. If the market

provided only for dealing in cash grain, all factors of value would be focused and concentrated therein. When the market provides for dealing in futures the influence of all the factors of value is spread over all the dealings, both for present and future deliveries. This immediately introduces new factors which confine fluctuations of the various prices to relatively narrow limits. The elements of value are so much talked about and the machinery of the Exchange is so convenient that a very attractive field is opened to speculation. Speculators, both professional and amateur, are found on every grain market. They try to forecast and thus take advantage of the fluctuations in the various prices for different deliveries. It is a well known fact that the broader the market, meaning the more sellers and buyers, the better and fairer are the prices. Therefore speculators who constitute both buyers and sellers probably are no disadvantage and may be of considerable advantage. It is immaterial that they do not expect to consume any grain. They must always depend upon the miller to eventually purchase all they may buy. They obviously cannot offer to pay less than the miller and obtain any grain. Thus they cannot depress prices below actual value. They therefore cannot hurt the producer. If they bid up prices the producer gets the benefit. They seem to exercise an unnecessary function, which nevertheless tends to broaden marketing facilities and to act as a stabilizer of prices.

{ *Factors determining future values* } The differences between prices for spot and the various future

deliveries of the same grade are due to several factors. Grain, particularly wheat, is not perishable. If it is in good condition it can be kept indefinitely. Present value is the cash price quoted for spot delivery and is determined by the fundamental law of supply and demand. An owner of spot grain may carry it for future delivery at a cost covering interest on the money invested in the grain and storage charges in the elevator, which include insurance. This shows the three principal factors, namely, storage, insurance and interest, all of which involve duration of time. Occasionally there are other factors, but as they seldom appear they have no permanent or material bearing.

[Terminal elevator charges affect prices] Under the rules of the Winnipeg Grain Exchange grain is deliverable upon contracts for spot or future delivery only when it is in store in a public terminal elevator at Fort William or Port Arthur. It is therefore evident that the charges in force in such public terminal elevators and which involve the element of time are reflected in the prices for future delivery. The only such item is the charge for storage which includes full insurance and which becomes the principal factor entering into the cost of carrying grain. If one has grain in store which could be delivered immediately on a cash sale and for some reason he wants to carry it for future delivery, he will have to pay the terminal storage charge, which includes insurance, and he will have to pay or lose the interest on the money invested in the grain. He must therefore ask a buyer

a price sufficiently higher than cash value to reimburse him for these charges or he will actually be out of pocket by the transaction. Such difference between prices for different deliveries constitutes what is known as "full carrying charge."

{ *Supply and demand* } ~~affect differences between prices~~—Very seldom indeed does the difference between cash and any future price equal the full cost of carrying. Usually it is a great deal less.

As a rule the cash demand is greater than the future demand, but sometimes the cash supply is less than the future supply. Either set of conditions narrows the difference between prices.

Exactly the same situation may arise in the differences between prices for the different futures. The supply and demand is always changing and the differences are always fluctuating. They play a most important part in the merchandising of grain. They must be constantly watched and instant advantage taken of favorable changes.

{ *Effect of closed navigation* } ~~upon prices~~—We have seen that water transportation is the cheapest and is used as much as possible in the grain trade. The great bulk of our business is therefore based on lake freights. Navigation on the Great Lakes is closed for the winter from early in December to late in April. Therefore, after the close, grain in store at Fort William or Port Arthur must lie until spring to be shipped by boat. This tends to make the December-May difference somewhere near full carrying charge. We have seen how the country elevators buy grain in the country during

the winter for shipment at the opening of navigation. As it is purchased it is sold for May delivery. This selling of May futures will seldom allow the December-May difference to reach full carrying charge. The railways also enter with rates to the east reduced to such level that it is a little cheaper to ship all-rail than to wait for the opening of navigation. This starts cash buying for immediate shipment. This tends to further narrow the difference to May and buying will usually continue as long as the market prices will allow profitable shipment all-rail. Sometimes a keen demand will drive cash prices away out of line.

But the most important effect of closed navigation is seen in the prices prevailing in the fall. All transportation and elevator facilities are taxed to the utmost in the keen endeavor to get out as much grain as possible by the cheap water rates before winter sets in. This throws a great quantity on the market in a very short time. The consumers naturally take advantage of the situation, knowing that the sellers can afford to reduce prices almost to the basis of all-rail shipment. This, coupled with the natural depression arising from the immense supply of grain offered, constantly operates to reduce the prices, both cash and future, until December. This frequently results in driving the price for each succeeding month below that for cash grain. This causes an inverted economic structure—grain which should be worth a higher price is actually worth a less price. Thus the effect of closed navigation shows not only during that

period when it is actually closed, but also for some time in the fall when navigation is open and our grain is moving in large volume.

[*Financial situation ^{and} affects prices*] One of the most serious factors in setting prices is the ease or difficulty in obtaining credit to finance purchases. Normally, there is sufficient credit in Western Canada to move our crop without effect upon prices other than allowance at ordinary interest

rates. As interest rate varies so the differences between prices for different deliveries will vary to somewhat the same extent. Any difficulty in obtaining funds will diminish buying and hence lower prices. During the financial stress in the fall of 1907 credit generally was sharply curtailed regardless of rate. This had a disastrous effect upon prices because cash grain had to be sacrificed at forced sales to repay loans which had been called and also because credit was not available to finance daily cash settlements on distant futures. This was exceptional, for as a rule financial stringency does not affect future prices until delivery time approaches. This is due to the fact that comparatively little credit is necessary to finance daily settlements and credit facilities, thus do not ordinarily become an important factor until delivery is made and payment demanded.

[*Rule for deliveries*]

~~Delivery must be made within specified period.~~

When grain is bought or sold for any future delivery, delivery must be made and accepted within a stipulated period. The rules of the

various exchanges specify that the delivery shall be in the month named and on any day thereof at the option of the seller. Thus if grain is sold for May delivery the buyer has to be prepared to accept delivery and pay for it on the first day of the month, but the seller need not make delivery until the last day of the month. This seems to be the only justification for the name "option" as applied to a trade for future delivery. If on any day during the month the seller tenders delivery of the grain and the buyer is not prepared to accept and pay for it, there has been a breach of contract. If the seller has not tendered delivery at the close of business hours on the last day of the month there has also been a breach of contract, and in either case the aggrieved party has an action for damages. Thus the ability of the seller to make delivery is an important factor in dealing in futures. As a rule the problem is simpler for the buyer. He has merely to arrange the financing, whereas the seller has to arrange for the physical transportation of all grain he may have sold and which was not in store at delivery point when the sale was made.

[How grain is "cornered"]

Corners—It is upon this difficulty of the seller to make delivery within the specified time that all corners are based. A daring speculator with sufficient financial backing will estimate the supply deliverable in some one future month. If he thinks he can pay for all that may be delivered to him he goes into the open market and buys all that is offered for that month, which will usually be more than the sellers can deliver. He accepts

and pays for all that is tendered to him and then he has cases for damages against the sellers who cannot deliver all the grain that they may have sold him. The measure of damages will be the additional cost to the buyer of procuring his grain from others upon the same market. When the sellers find they cannot make delivery they try to buy it from other people. This at once puts up the price on themselves so that when the measure of their default is ascertained they are compelled to pay the difference between their selling price and current market price, which has been raised by their own bidding.

Attempted corners are usually unsuccessful because the high prices bring out a great deal more grain than is counted on. This makes the burden too heavy for the buyer as he has created an artificial condition and has no outlet except at a loss for any of the grain which he may have accepted at abnormal prices. Occasionally, however, a corner is operated by somebody farsighted enough to anticipate an actual rise in values. This happened in Chicago only three or four years ago. In this case the buyer started buying months in advance. When delivery time came the export value was higher than the price which he paid on his purchases, but he had bought so much that there was no more for sale. He was then in position to take delivery of all that was offered him and re-sell the same grain for export at a very handsome profit. The difference in the two situations is that under the artificial conditions which are usually created in the operation of a corner, the entire profit is looked for through the defaults of the

sellers. In the other situation, where actual consumption conditions have been accurately estimated, the profit is looked for in the merchandising of the grain itself at an increased value and any profit derived from defaults of sellers is but incidental to the transaction.

The Clearing house Trading in contracts which mature some time in the future naturally involves further trading or cancellation any time before delivery is required. As the original trade does not involve the present payment of any money by either buyer or seller, there should be established a method of guaranteeing the eventual completion of the contract by delivery of the goods and full payment therefor for the protection of both buyer and seller. It is natural that if anyone buys grain and then the market goes down so that when he has to take delivery it is not worth as much as when he bought it, he might try to evade his contract. On the other hand if anyone has sold grain for future delivery and when delivery time comes it is worth more than when he sold it, he might naturally desire to escape making delivery. It is to guard against these possibilities that there has been worked out the system of daily settlement of differences between buyers and sellers according to market fluctuations. This is done on the Winnipeg Exchange through a separate organization which is subsidiary to the Exchange proper and to which belong practically all members of the Exchange who trade extensively in futures. It is "The Winnipeg Grain and Produce Exchange Clearing Association," commonly called the "Clearing

House." All members of the Clearing House report to it daily their standing upon the market, both as buyers and as sellers, and the profit or loss resulting to them due to the market fluctuations. Payments are made and received every day with the statements so that everybody's standing at the close of business hours is adjusted to zero. The Clearing House itself not only acts as intermediary receiving and making all adjusting payments, but also actually assumes all purchases and sales and is liable for delivery thereof and payment therefor. It makes a small charge for its services, the profits of which have been built up into a large fund which gives the organization substantial backing and financial responsibility. Since its liabilities are reduced each day to zero, it can only be responsible for the fluctuations of one day and only on the trades of defaulting members. It is very rare indeed that the Clearing House has to assume the liabilities of any of its members.

When delivery time comes, if future trades have not been cancelled by the parties thereto, arrangement is made through the Clearing House for delivery of the grain itself as between members. This enables the sellers to quickly place grain where it should go and thus to make enormous deliveries in a single day.

[Cash sales basis options] Although a large amount of grain is delivered on future contracts through the Clearing House, a much greater amount is delivered direct to purchasers before delivery may be required by the terms of the

contract. Thus a seller may sell a thousand bushels of grain to a buyer for delivery three months hence. He actually desires to make delivery only one month hence. When that time comes he arranges with the buyer to take delivery immediately at an agreed discount under the future and to cancel the original contract for future delivery. This utilizes all of the advantages of dealing in futures and does not in any way prejudice the fair cash value of the grain. In fact, this is the generally accepted method now used in handling all cash sales.

~~Trading in futures provides method of eliminating speculation.~~ It does not very often occur to people that it is only when commodities may be bought and sold for future delivery that speculation may be eliminated. A merchant dealing in dry goods or groceries who must buy today for sale a few weeks or months in the future is speculating. He must estimate the probable future selling value of his present purchases. If he estimates correctly, he will make a profit, but if he uses bad judgment, or unusual conditions occur which depreciate the value of his goods, he will suffer loss. As this risk is always present he must allow an ample margin to protect himself. On the other hand, where there is an active market for buying and selling for future delivery, such as there is in grain, coffee, cotton and sugar, and to some extent in metals and hay in the United States, this risk of loss will practically disappear under proper handling because present purchases may not only be based on known future values but the purchaser

may immediately sell for future delivery at the value used in determining the purchase price. This is the soundest business and instead of putting the grain trade in a speculative class it does exactly the reverse. Of course, one may speculate if he wishes, but a legitimate grain merchant need not and does not. Although it is impossible to entirely eliminate all risk in practice because of the different grades and because of varying differences between different futures, nevertheless the basic principle is sound and it all reacts to the benefit of the farmer by affording dealers the opportunity of safely eliminating all allowances for market fluctuations, thus insuring the sellers the highest possible prices at all times.

[*Hedging by country elevators*] Through the organized market of the Winnipeg Grain Exchange the elevator companies always know the highest price they can afford to pay for grain in various positions according to its expected delivery in Fort William or Port Arthur. They put out their bids accordingly at the close of the market each day. As fast as purchases are made in the country the amounts thereof are reported to the head offices in Winnipeg. The companies then sell immediately the same amounts for different deliveries, according to the position of the grain when purchased. This selling of futures against cash purchases is called "hedging." In taking such action the companies really perform two separate actions, although they are both part of the same transaction—they have bought some grain which they have in their possession and they

have sold a contract to deliver a like amount of the same grain at a future time. If the price advances their cash grain becomes that much more valuable but at the same time they lose an equal amount on their sale for future delivery since they have already sold at a price that much below its new value. On the other hand if the price declines, their cash grain becomes less valuable but at the same time they gain an equal amount on their sale for future delivery since they have already sold at a price that much above its new value. Thus they are not at all concerned in market fluctuations as each day's losses balance each day's gains and adjustments are always made daily in cash with the Clearing House. The only thing that interests them is the original difference between the price they paid on the purchase and the price at which they sold the hedge. Since the prices to the country are always based on the corresponding values for future deliveries and since the hedges are actual sales of the very futures on which these prices were based, it is obvious that the original difference which allows for expenses and profit becomes clinched immediately the hedge is completed. Thus the companies are protected and are not interested in any market movements either up or down because they neither gain nor lose, no matter what may happen to prices.

Hedging is only ^{Value Organization} possible under the highly organized market. It was impossible years ago because the machinery for trading in futures was not perfected. In the old days it was necessary to speculate on purchases and therefore the prices to the country had to be made sufficiently wide

to overcome this element of risk. The modern method eliminates speculation as far as possible and enables the elevator companies to buy on a very narrow margin. In fact the margin is so narrow that profit or loss is determined simply by good management in the operation of the elevators at minimum expense and by the highest ability and judgment in handling sales.

Every contract grade is deliverable on futures, therefore hedging of such grades consists of simply selling the required amount for future delivery. As no grade other than contract grades can be delivered on a future, the hedging of such other grades presents some difficulties. Whenever possible, a sale of the specific grade is made for future delivery at the desired time. Not much of this can be done as buyers are seldom ready to contract very far ahead for inferior grades. Elevator companies must therefore do the best they can by selling futures calling for contract grades and taking their chances on cancelling such sales and substituting others for the lower grades when delivery time comes. Although this gives incomplete protection as it will not cover variations in the differences between lower and contract grades it does absolutely minimize the risks. Thus although it is necessary to buy low grades in the country at slightly wider margins than contract grades so as to make some reasonable allowance to cover changes in prices as related to the contract grades, the system of hedging enables the elevators to limit this allowance to a very small figure.

[Value of ~~Winnipeg~~ Exchange to ~~our~~ farmers]

Apart from the more or less indirect benefit of the Exchange to the farmers through the efficient machinery for trading, thus allowing the business to be more cheaply performed, the Winnipeg Grain Exchange gives valuable aid directly to the farming community. The most important is the opportunity to grain merchants to hedge purchases, thus eliminating allowances otherwise necessary to cover fluctuations in prices.

Then it exercises the closest supervision over the actions of its members with whom the farmers deal. If any farmer feels he has not received proper service or price, a letter to the secretary of the Exchange will at once cause a thorough investigation. If the complaint is found to be justified the offending member will be disciplined to prevent any further irregularities, and the customer will be assisted in every legitimate manner to secure redress of any damage or loss. Fortunately the high integrity of the members has made such occurrences very rare indeed, but the protection is always there just the same.

Then, too, the current market quotations are freely given to the general public. They may be compared with values on other markets, and the farmer is thus enabled to compare prices and to ship his grain where it will net him the most. In the matter of quotations a difference between the Winnipeg and other exchanges should be noted. In every primary grain exchange on this continent, Winnipeg included, the highest grade of any grain is usually the standard deliverable on future contracts. One general exception is that 1

Northern wheat instead of 1 Hard is the almost universal standard in wheat. In all other markets except Winnipeg only these standard grades are deliverable. In Winnipeg only, other and lower grades are deliverable at fixed discounts. This has the effect that in other markets prices for futures which really represent prices for only one particular grade may be driven to a very high point due to scarcity in that one grade. As against this the future prices in Winnipeg cannot be unduly affected by such shortage in the standard grade because the lower contract grades will at once be delivered instead of the standard. This is a wise provision to steady the market, but its presence must not be overlooked in comparing Winnipeg prices with others. It is far safer to compare cash values, making due allowance for differences in grades and the possible effect of buying on sample which is prevalent in the American exchanges.

CHAPTER VII.

FINANCING THE CROP MOVEMENT

Necessity for easy financing—A farmer's grain crop represents the greater part of the revenue from his farm. He must utilize the proceeds to obtain all of his necessities and comforts. Instead of actually exchanging the grain itself for machinery, clothing, food and everything else he requires, he exchanges his grain for money which he, in turn, exchanges for these other things. The problem of getting this money to him as he requires it is a very large one and the care and facility with which it is accomplished has a very important bearing upon the price he receives. If it were difficult for him to obtain the funds necessary for his financing, in the necessity of getting money at all, he would have to sacrifice his grain. Any impediment in the movement of the money itself would probably be more costly than any other difficulty in the entire system of handling the crop. This is because money is our universal medium of exchange and is thus a universal necessity of life in our modern economic structure.

Necessity of funds for carrying crops—The ultimate consumer of grain does not buy at once a whole year's supply, not only because he probably has no place to put it, but also because he probably has not sufficient money to pay for it. As a rule, however, the farmers cannot conveniently wait for deferred payments. Therefore somebody between

the producer and the consumer must be prepared to advance the farmer money as he requires it, and carry the grain until it is consumed and paid for.

Grain trade cannot finance crop—It costs about \$6,000 to build a country elevator, which will hold 30,000 bushels of wheat. With wheat worth seventy-five cents in the country, it would require \$22,500 to pay for enough to fill one of these elevators. As such an elevator would be filled only for a short period in the year, the maintenance of a sufficient fund to buy the wheat would entail loss to the elevator company, as this money would be idle the greater part of the time. It is therefore manifestly impossible to expect the elevators to finance the crop movement.

The same situation applies to every other branch of the trade—it would require a great deal more working capital than investment to fully finance its grain and this enormous working capital would be idle a large part of the year.

Grain is handled in great volume. Its value reaches very large figures. It is at best a seasonal business. Even with ample facilities for distributing the marketing over as long a period as possible, in the nature of the case there must always be irregular requirements for money to finance its movement.

Function of the banks in financing crop movements—The business of our banks is to collect deposits in small units from a large number of people and utilize the funds as a basis of credit for trade and commerce. This money is thus made to work first for those who deposited it with the bank,

and secondly for the people engaged in commerce. The latter pay for its use by interest, and after deducting expenses and profits the banks in turn pay the depositors. As banks are in a position to lend money to all branches of trade and commerce, they are prepared to take care of the requirements of the grain trade and the burden of providing credit for the financing of our crops thus naturally falls upon their shoulders. The elevator companies or other grain merchants will have in their business such working capital as prudence will dictate. This is usually a substantial amount which they can keep working most of the year. They will call upon the banks to lend them what they need for seasonal requirements. Upon repayment of this money it is then the business of the banks to use it elsewhere in other seasonal businesses so that it is kept working all of the time. This effects an economy in the use of credit which would be impossible to accomplish by any grain company.

Velocity of credit—It probably requires about \$50,000,000 of credit to move our grain crop of Western Canada. This money is loaned to elevator companies, commission merchants and track buyers, each of whom does its own share in moving the crop. Even with the immense amount of money provided by the banks, it would not be nearly enough if the grain were allowed to accumulate. When the movement has once begun and the use of credit becomes extensive, the problem becomes that of keeping the grain moving as rapidly as possible so as to keep the credit turning over. To this end every

agency, both grain dealers and transportation companies, must use their best efforts.

This is called velocity of credit and is a highly important factor. If our wheat went all the way to Liverpool before it was paid for it would take several weeks or months to get the money back. This would make very slow financial returns. If we can keep a dollar at home and use it twice, it will do the same work as if we had two dollars and used them only once. Therefore the faster we can turn over our dollars the more work will they perform. We can do this much easier if we do not let our grain get east of Fort William before we get the money it represents.

Commercial grouping of credit facilities—Exactly the same reasoning applies to other sections of the grain trade beyond Western Canada. Each one in turn is seasonal, although the period comes later in the year as the grain is transported farther from the fields of production. In getting our wheat to the miller the business is split into sections; (1) from the farm to Fort William, (2) from Fort William to the seaboard or domestic miller, (3) from the seaboard to foreign grain exchange, (4) from the foreign exchange to the miller.

This division of the business has been largely brought about by the necessities of convenient financing. The system lends itself admirably to the established methods of banking. Credit conditions are different in different localities, and it is very undesirable to allow their businesses to overlap where it is convenient to keep them

separate. By limiting our financing to the conditions of Western Canada we are able to do far better than if we had to conform to the accepted methods of Liverpool. With us money is comparatively scarce and the entire business is on a cash basis. Whenever grain is delivered it is paid for at once. In Liverpool, where surplus money is much more plentiful and credits are much easier, time payments are frequent and even customary. It is nothing unusual to grant terms of three to six months after delivery for payment. It is therefore far better for the Western Canadian banker to handle his financing under the accepted conditions of our locality, and leave the burden of long credits to the English banker, who is well prepared to take care of them.

The financial districts as outlined for the grain business are not peculiar to that trade. They are found in all lines of commerce. They are due to geographical and economic factors which experience has found to be somewhat the same in each district and somewhat different in the various districts. The financing of all businesses within any one district is therefore somewhat the same while the financing of the same business in the different districts may be different. This tends to establish the same interest rate for various businesses in any one district and perhaps different rates for the same business in the different districts.

Factors governing amount of credit available for Western Canada—In any business it is good policy to spread the risks as far as possible so

as to avoid general loss by failure at any one point. The easier the business can be spread according to its nature, the more widely will the risk be distributed. Credit, which is the commodity handled in the banking business, flows more freely than any other article of commerce. Because of international banking connections, it is easily transferred from one country to another. Through the system of interior banks it is easily transferred from one district to another. In any one district because of its universal demand credit is readily transferred from locality to locality or from business to business.

Our Canadian banks will apportion to Western Canada generally just that part of their available credit which they think is prudent, considering ordinary commercial risks involved and the necessities of general business. They thus balance Eastern against Western Canada so as to take care of commercial requirements and to distribute their risk of loss. They will then apportion to the grain business what they consider to be its proper share. They always allow a fair proportion because they realize that all the other businesses of Canada depend to a large extent upon the marketing of our crops. If they haven't enough to go around, they may borrow some to help out the grain movement.

Factors of interest rates—The interest rate charged in any business for the use of credit will vary with (1) the market price of money due to general demand, (2) steadiness of demand within that business, and (3) nature of security offered.

A mercantile house will carry considerable stocks the year round and will use its credit largely throughout the twelve months. It might thus expect to receive its credit at a slightly lower rate than the grain business, which uses its money only part of the year. This, however, is somewhat counteracted by the units of time for which credits are extended. Generally in the United States units are from three to six months and the rates for these periods are practically uniform regardless of the nature of the business. Just now in Canada the units of time are largely for a whole year, but there seems to be a tendency to reduce them to the same basis as in the United States. Probably, therefore, if there is now any disposition to make a difference in rates between the grain business and mercantile houses because of the seasonal nature of the former this tendency will shortly disappear because of the re-arrangement of the methods of extending credit. Credit is never lent except upon good security. The higher the quick cash value of such security, the more readily obtainable and the cheaper will credit become. Grain is one of the necessities of life and because of the highly organized grain exchanges it is very easily and quickly turned into money. Therefore the grain merchant is in a position to offer collateral security of the highest value. This has a marked influence in attracting credit at interest rates as low or lower than any other business.

Service of the elevators—Country elevators not only assist in the financing of the crop movement

by buying grain, but they also provide warehouse receipts on its delivery for the owner's account which constitute excellent collateral security for loans. Any banker will readily loan money against such security. Where no bank is convenient, the elevator will itself loan money on its own storage tickets at current rates of interest. As there is an elevator at almost every railway siding, the farmers are afforded easy opportunity of securing funds either by outright sale or by way of loan. Although the storage tickets provide excellent collateral they are only evidence of grain put into store in the country and cannot have any more value than the grain itself in such position. When, however, the grain goes into store in a terminal elevator, then its value as security is greatly enhanced. Country storage tickets may then be exchanged for terminal warehouse receipts which are received by all the banks as the best possible security. They constitute a convenience without which the financing of our crop would be more costly.

Interest always chargeable to grain—No matter whether the working capital to finance crop movement is supplied by the banks, grain dealers, or farmers themselves, it is always worth current interest which must be considered a legitimate charge against the grain. Its cost is therefore an item of expense in the business. Under the law of supply and demand any surplus commodity is worth what somebody will pay for it. Money or credit is a commodity. It is always in universal demand. Its value in the form of interest rate is quoted everywhere. As the grain business

must compete with other businesses in procuring this credit, it is only common sense to allow its market value in computing expenses of the business. Whether or not the money is already in the business or is borrowed for the purpose is not material as its current value is present in either case.

CHAPTER VIII.

THE CANADA GRAIN ACT AND BOARD OF GRAIN COMMISSIONERS

History of Grain Act—Many years ago, during the early period of the elevator and grain business in Western Canada, there was a great deal of complaint from the farmers of abuses and low prices, all of which were presumed to be intentional to give excessive profits. This led to the appointment of a Royal Commission by the Dominion of Canada, which investigated the situation and recommended that the business should be under Government control. In accordance with this recommendation, the Parliament of Canada enacted in 1900 the first law intended to regulate the trade, more especially in those branches directly relating to the farmers. It was called the "Manitoba Grain Act." This title was selected probably because at that time most of the grain production was confined to the province of Manitoba. The original Act was very crude and incomplete. Its administration was provided for by the appointment of a Warehouse Commissioner whose powers were rather indefinite and somewhat limited. This Commissioner from time to time recommended alterations and additions to the Act. Although these changes were necessary or advisable, each one was apparently constructed separately and without any special reference to the rest of the Act. The

result was that as they were embodied, the Act became that much more disjointed and ambiguous. On two or three different occasions the Act was revised, but in no case did its revision take the form of complete re-writing, so little or no progress was made toward unification and clarity. The last revision took place in 1912. At that time its name was changed to "Canada Grain Act 1912." A fundamental change was made in the abolishment of the office of Warehouse Commissioner and the appointment of a Board of Grain Commissioners with wider powers.

History of Inspection Act—Inspection of grain was first provided for by Dominion legislation in the early eighties. The Act was general, applying to other farm produce as well as grain. It did not define any grades, but merely provided for type samples as set from year to year by the inspector. These varied according to crops and deliveries and thus were not conducive to stable values. Shortly after the passage of the Grain Act the Dominion Parliament enacted a law called the "Inspection and Sales Act," which referred only to grain and defined the statutory grades. This Act was revised from time to time and eventually incorporated with the Grain Act, so that now the Canada Grain Act covers fully the handling of grain, including its inspection and weighing.

Early conditions surrounding trade—In considering the causes which led to the enactment of the Grain Act, it must be remembered that the conditions of the business at that time were very

crude and incomplete. There was no modern grain exchange in the country. There was not much volume of business and supply and demand were therefore very irregular. It was necessary to change prices materially and suddenly because of the violent fluctuations in the export values. Because there was no method of dealing in futures, it was necessary to maintain wide margins between buying and selling prices so as to allow for unforeseen fluctuations. There were no established grades and it was impossible to establish any uniform standards of quality, the absence of which caused big risks of value. In short, the whole business was on a highly speculative basis and could not be otherwise considering the crude and imperfect conditions then existing.

Present conditions surrounding trade—Within the last few years there has been a wonderful change in the business. Grades are well established. The Winnipeg Grain Exchange provides a well organized market for both cash and future sales. Price fluctuations are gradual. The enormous increase in volume allows small margins of profit. The elevator system is working smoothly and prices in the country are very much higher. This, of course, must lead to better satisfaction on the part of the farmers. It is debatable, however, how much of this betterment, except as to grading, is due to the Grain Act, and how much of it is due to natural evolution within the business itself. It is quite probable that the situation today would be practically the same without the Act.

Three methods of doing business—The theory of the Grain Act is that there are only three methods by which anybody can handle grain, each distinguished from the others by well established legal liabilities—(1) as merchant, (2) as warehouseman, and (3) as factor or agent. The first includes track buyer and country elevator where the dealer exercises his function in buying grain outright. The second includes the terminal elevator and the country elevator in the exercise of its function by doing a storage business only, and the third includes all commission merchants. In theory each of these three has its own methods and well defined responsibilities. In practice, however, they are constantly overlapping one another. A commission merchant almost always operates as track buyer and the country elevator frequently operates as merchant, warehouseman and commission merchant. A terminal elevator alone is strictly limited to just one class, namely, that of warehouseman. This is because the law specifically provides that it cannot perform any other function. Because of the frequent overlapping it is sometimes quite difficult to determine in fact under which of the three classifications many common transactions are performed. The question of the exact nature of any transaction seldom arises unless there is trouble and the bond is attacked. As this sometimes happens, however, it is necessary that the various responsibilities be carefully defined and fully covered. In this feature both the Act and the bonds are imperfect, but the Grain Commission is now working to correct these defects and probably in the near future the faults will be remedied.

Discrimination—The Grain Act is very clear on the question of discrimination by elevators. All customers must be treated exactly alike. This is also good business for the grain companies as nothing will cause dissatisfaction among customers as quickly as discrimination. Dissatisfaction is something no company can afford to encounter. Thus the stringent provisions against discrimination are not only protection to the farmers at large, but they also safeguard every company from such mismanagement.

Fraud—As in ordinary law, the penalties for fraud are very severe. There, of course, must be common honesty in this as in every other business. Here again arises the question of ordinary commercial prudence as surely no person or firm could expect to stay in business very long if it practiced anything but the highest honesty and integrity. Unfortunately, there is an occasional unscrupulous dealer who works his way into the grain trade. Almost invariably he is a man of no capital and is simply out to make as much money as he can by dishonest methods and then stop before he gets caught. The provisions as to fraud may therefore be very valuable in such cases, but it is difficult to conceive any strong and well run company ever violating ordinary principles of honesty and integrity and thus breaking these provisions of the Act. Of course where a company has to operate almost entirely through agents, as is the case with line elevator companies, it is difficult to always select men of known integrity. Every reasonable precaution is taken, even to the

extent of private fidelity bonds insuring honesty, but even then the chances are good that almost every large company is unknowingly carrying some dishonest men. As no reputable company countenances irregular actions of any kind on the part of its employees, it cannot be held to violate the law if one of these men disobeys instructions and commits a dishonest act although, by so doing, the employee of course makes himself liable for criminal prosecution.

Eastern and Western Inspection Divisions—For the purposes of the Grain Act, Canada is divided into two parts. The district lying east of Port Arthur is called the Eastern Inspection Division, and the district, including Port Arthur and to the west thereof, is called the Western Inspection Division. This is because the characteristics of grain and methods of handling are essentially different in each division. In the east practically all of the grain is consumed locally so that there are short hauls by rail. What little eastern grain is exported is shipped in sacks and there is not sufficient volume to warrant any elaborate system of supervision. Also, western grain for export passes through the Eastern Division intact. Thus there is little or no supervision provided in that Division.

In the west production is much larger and very little grain is consumed locally. Practically all of it is shipped long distances by rail or water or both. It is therefore convenient and proper that comparatively elaborate machinery should be provided for the Western Inspection Division.

Control vested in Board of Grain Commissioners—

The Board of Grain Commissioners is the foundation of the structure. This is a body of three men appointed by the Dominion Government for long terms. Although they are not a court and have no judicial power, their field of administration under the Act is so broad that they exercise a strong influence in the trade. Through the system of licenses and bonds, they have the direct supervision of all the elevators, both country and terminal, also of all commission merchants and track buyers. This covers all branches of the trade which meet the farmers. Part of the Governmental machinery which they control is the Inspection Department. The Grain Act gives them no control over scales used in elevators as all scales come under the Division of Weights and Measures of the Department of Inland Revenue. By a working arrangement between the Grain Commission and this other Government department, however, the Commission supervises all scales at terminal elevators. Although the Grain Commission, by the terms of the Act, has no control over the railways except in some specific instances, they co-operate with the Board of Railway Commissioners in all matters relating to the movement of grain.

*Licenses—*The matter of licenses is the most important thing the Grain Commission has to deal with. Under the terms of the Grain Act no elevator, commission merchant, or track buyer can operate without first securing a license from the Board of Grain Commissioners, and if such

license is cancelled or is not renewed upon its expiration, the operation must immediately cease. The licensing itself is purely a nominal matter. Almost anybody in good standing can secure a license upon payment of a small fee required, and filing the necessary bond. The fact that a license is required is the keynote of the whole scheme. If for any reason whatsoever the Grain Commission refuses to issue a license or cancels one after its issue, it has simply put the offender out of business.

Bonds—With every application for license there must be filed with the Board of Grain Commissioners a surety bond which is intended to cover all of the financial responsibilities incidental to the operation under the kind of license desired. The bond of a country and terminal elevator guarantees its faithful performance of obligations as warehouseman, including the carrying of full insurance. That of commission merchant and track buyer covers the obligation of their performance of contracts of agency or purchase and the settlement in full thereof. The bonds themselves are not prescribed by the Grain Act. They apparently were drawn separately and at different times. As a result, they do not quite cover what they were intended to. Even when two or more bonds are furnished by the same person or firm all of the possible obligations are not fully covered. They are at present being revised, and it is hoped that very soon they will be in proper form. However, in spite of their defects they have done their work very well. Even with the few defaults

in the history of the grain business almost all of the losses have been fully covered by the bonds and innocent customers have been generally protected.

Since a bond is required for every license, if an applicant cannot furnish one or if it is cancelled or attacked by reason of inability to fulfil obligations after the license is issued, the Grain Commission immediately cancels the license. This procedure is automatic under the requirements of the Act. Thus whenever there is any doubt as to the financial responsibility of any licensee resulting in the impairment of the bond, that person or firm is at once stopped from doing business. Protection in this respect coupled with the power of cancellation for discrimination or fraud gives the Commission strong control over these branches of the trade.

Function of Grain Commission.—The work of the Grain Commission is divided into departments. There is the general administration work, which is conducted by the Commission itself through its secretary. Routine operation is carried on through various departments, each with a responsible head, such as inspection, weighing, registration, statistics, country elevator supervision and terminal elevator operation. Each of these departments is small or large, simple or complex, according to the nature of its duties.

Inspection department.—The largest one and that which requires the most elaborate organization is the Inspection Department. Its headquarters

are at Winnipeg, where is located the Chief Inspector. Under him are the deputy inspectors at other inspection points in the Western Inspection Division, such as Fort William and Calgary. At each inspection point is maintained a sufficient force of inspectors, samplers, clerks, etc., who perform the actual work of inspection and recording. The department is highly organized as the nature of its duties requires very accurate and rapid work. Any delay would retard the movement of grain at great cost to the country. Any irregularities in the inspection would cause discrimination and dissatisfaction. It is pleasing to observe, however, that this department is so well organized and operated that its work is very satisfactory.

Weighing—The next largest department, and one which is just as important to the trade, is that which has charge of the weighing. It is centred at Fort William, where is located the Chief Weighmaster, who has a staff of assistants. Although most of his work consists in the weighing in the terminal and hospital elevators at Fort William and Port Arthur, he has men in the Government interior terminals at Saskatoon and Moose Jaw and at other places where official weights are given. Although the weighing of grain is a simple process it requires close concentration and a high degree of accuracy. When the operation is spread over many different elevators and over many different scales in each elevator a very efficient organization is required. The men themselves must be of good ability and of the highest character and integrity. It is likewise

pleasing to note, however, that this department is so well organized and so well handled that its work is very reliable.

Registration—The Registration Department relates entirely to the public terminal elevators at Fort William and Port Arthur. It operates in conjunction with the Inspection Department. Its purpose is to officially check all receipts and shipments of public terminal elevators. The Commission requires that every warehouse receipt issued for grain received shall be registered and also that the registered warehouse receipts shall be cancelled on all shipments. The same requirement is enforced by the Winnipeg Grain Exchange. By methods already described an exact Government record is kept of all receipts and shipments at every terminal elevator. A balance at any time shows the stocks on hand. Public reports of receipts, shipments and stocks are issued every week. These are of great value in the trade. Every year when the stocks are low in the terminals a weigh-up is taken by the Departments of Inspection and Weighing, which means that every bushel in store is officially weighed by grade. These results are then compared with the records of the Registration Department and the overage or shortage in each grade officially determined.

Statistics—The Statistical Department is quite new. Already its results have been very interesting and of value. As it continues its work and its statements become more comprehensive it will make a place for itself in the trade. Its duties

are to compile all figures relating to receipts at country points, inspections, receipts, shipments and stocks at terminals, and all other information of similar character which can be of value. At present much of this work is being done by other Governmental departments, notably the Census Bureau. It is hoped that eventually all of this work relating to the grain trade will be done by this department of the Grain Commission. They are logically the proper ones to handle it as they are specialists in this business and therefore are in position to do the work better than can be done by others.

Country elevator supervision—It has already been mentioned that there are about 2,500 country elevators in Western Canada. Although methods of handling grain are very well standardized, there are many differences in detail at different stations, and even in different elevators at the same station. These are due to the policies of the operating companies or to the peculiarities of the buyers at the various elevators. Then, too, during the busy season grain is handled so rapidly that sometimes there are minor errors of omission which if allowed to continue might lead to more or less serious results. Sometimes complaints are made to the Grain Commission concerning these matters. While they are seldom, if ever, of a serious nature, it is desirable to keep a close check upon the work of every elevator. Regardless of any complaints or any differences in methods of operation, close supervision is a duty of the Grain Commission by virtue of their responsibility in issuing licenses and accepting bonds. They therefore deem it

advisable to maintain a system of direct supervision. This has taken the form of a few inspectors who spend their time in the country travelling from station to station and checking closely the operation of each elevator. They have done very good work in posting the various buyers in the detail requirements of the Grain Act. They have also done excellent work in explaining away complaints where there really have been no grievances and in showing that the trouble has been caused by little acts of omission or commission which in themselves amounted to nothing except to create misunderstandings. As this system is extended it will undoubtedly be of great value both to the farmers and to the elevator companies as it will do a great deal to establish mutual understanding and confidence.

Operation Government elevators—In addition to the administration of the Grain Act the Grain Commission is an operator of the terminal elevators built by the Dominion Government. They thus perform the same function as any commercial terminal elevator company. They have at present three elevators, one at Port Arthur, which is a real terminal elevator, and one at Saskatoon, and another at Moose Jaw, which are so-called interior terminal elevators. To operate these houses they have their staffs of superintendents, engineers, workmen and clerks, just the same as any commercial company.

Present Act is faulty—The present Grain Act is not much better in its structure and wording.

than its predecessors. Little or no change was made in the last revision except such alterations in substance as were deemed necessary at the time. No general re-writing was attempted. The Act is therefore faulty and inconsistent, but under the administration of the Board of Grain Commissioners it is workable as a whole and fairly well answers the purpose. To be a good law, however, it badly needs re-writing and it is hoped that the Dominion Government will soon have this done, simplifying and clarifying it to the fullest possible extent.

CHAPTER IX.

ECONOMIC RELATION OF THE GRAIN TRADE TO THE FARM

Grain trade affects selling side of farming—All of the foregoing description of the practices and theories of the grain trade affect only one side of the farmers' industry—the selling side—and then only to the extent of the price per bushel. The number of bushels is equally important, but the grain business has nothing to do with that. Grain, and principally wheat, is the main product of the farms of Western Canada, and therefore constitutes the farmers' principal article of sale. As it is from his sales that he derives his revenue, we have therefore been discussing the conditions surrounding his principal income. But income is only relative. It shows profit or loss only when compared with operating expenses. No matter how small the income, it will show a profit if expenses are low enough, and the largest income will show no profit if expenses are too high. In any case the measure of the profit must be based upon the investment. Therefore to find the real effect of the grain business upon the prosperity of the farmer it is necessary to consider all sides of his problem and not only the selling side.

Farmer as a manufacturer—Perhaps a very good conception of the farmer's economic position is to

treat him as a manufacturer. He may very well be considered such—his farm is his factory, nature is his process, his workmen are himself and his helpers, working with the aid of horses and machinery, his manufacturing consists in taking a small quantity of raw material which is food to the world and manufacturing therefrom by natural process with the aid of labor and machinery a much larger quantity of the same commodity. He starts with his investment in his farm or factory; his plant and machinery consist of buildings, horses and farm implements. He then purchases his raw materials in the form of seed or live stock, and with the addition of labor and process he turns out his finished product. He is able to buy both his plant and his raw material on time. He may have to pay out a little cash in wages, but indirect payments of food and shelter may be made on credit. When he comes to sell his product, he receives cash for it any time he wants it. This is really a very advantageous position. There is no other business in the world where the conditions are so favorable.

Spreading of risk—Like every other business, he must get the highest possible results from his enterprise if he wishes to make a success. Every condition must be fundamentally sound. One of the most important is breadth. This means that the farmer must spread his risk as greatly as possible and must utilize every means of incidental revenue. This not only increases his income, but reduces his unit cost by spreading his expense over a greater output. If he restricts his activities to only one

product he is simply putting all of his eggs in one basket and he is absolutely disregarding all chance of revenue from by-products. This is exactly what the great majority of the farmers in Western Canada are doing. They are staking their whole existence on the raising of wheat. They are tied hand and foot to only one crop.

Turnover of capital—From any grain only one crop a year can be raised. This means there is only one turnover of capital. The small country storekeeper is a very poor merchant indeed if he does not turn over his stock or working capital two to four times a year. The farmer should have a pay-day every month instead of only once a year. It is the same question of velocity of credit as in the movement of grain. That is, by using the same dollar twice you can accomplish just as much as if you used two dollars only once. This simple little illustration shows a ratio of four to one in efficiency. Such a handicap is very serious and requires careful study to overcome.

Danger of over-production—A single crop leads to over-production and consequent reduction of prices. When the grain is once sowed the process cannot be stopped. If therefore it happens that a great deal of the same grain has been sown the same year there is bound to be an over-production at harvest and prices will be depressed. This was apparent in Canada and the United States in the flax crop harvested in the fall of 1912. The year before that there was a flax shortage and the price rose to \$2.50 a bushel. So many farmers then

decided to sow flax that the production in Canada was increased over fourfold. The United States also had a very large crop. The result was that the price went down to about \$1.50. As soon as the seed had been sown it was perfectly clear what was going to happen because the enormous acreage was commented upon in all of our newspapers. It was too late to stop it and the only thing to do was to let the flax grow and make the best of it.

Right now there is great danger that the immense production of wheat contemplated for the next crop in almost every grain-producing country will lead immediately to over-production and consequent low prices, even if the European war continues. If the war should cease before harvest the result would be little short of a calamity for almost all of our farmers. And even if we raise a bumper crop and realize high prices the situation will be fraught with grave danger, because low prices will only be postponed, and when they do come it will be only those farmers who have carefully prepared for them on sound business principles who will be able to successfully and comfortably weather the depression.

Farming is a hazardous business—In the nature of the business farming is hazardous. There is first of all the question of market fluctuations in the finished product. A good crop may show a loss. Besides this there is the danger of raising only part of a crop. A partial or complete failure may be caused by hail or unseasonable weather, and there are many causes which might seriously affect its quality. A proper business precaution

under such circumstances would be (1) to distribute the risk over different kinds of crops, and (2) to set up cash surplus in profitable years to tide over the business in unprofitable years. It is a curious fact, however, that our farmers persist in raising single crops and seldom set up any cash surplus. They are borrowers by nature because of our easy credit facilities. ~~Whenever they have any~~ thing left after paying their debts they almost always put the money into more land, more buildings or more machinery. Frequently these expenditures are ill-advised. In fact most farmers today are struggling under the load of extravagant management. They are blaming their losses upon low prices for wheat or any one of several other things except the possible mismanagement right on their own farms.

It is true that when wheat prices are low enough there is no profit in farming, but the blame should not be laid upon the fact of low prices. The probability of such low prices is always present, and surely no reasonable minded man should undertake to do business profitably in the face of this danger without establishing every reasonable protection. This is where our farmers as a class are weak. They do not take reasonable precautions dictated by a careful analysis of the entire problem. We have discussed at length the process of handling grain, and it should be clear that while the farmer has the widest possible market for his product, it being a necessary of life, this very fact brings him into competition with all the rest of the world. His product is one whose value is entirely useful and in no sense a

luxury. It is imperishable and will therefore keep for long periods of time. Its markets are public and the prices are therefore well known and are the highest obtainable in open competition. It is readily salable and always for cash. It is therefore a most desirable product to make, but that does not warrant sole dependence upon it for profit.

Farm efficiency and by-products—The problem is no different from that of any other business. It requires the development of maximum efficiency. Wheat will always be the main crop of this country. There is no use trying to change that. But that does not mean that it should be practically the only crop, as it is at present. Our farmers should continue to raise wheat in large quantities—a great deal more than is raised now. They should do this, however, by better methods of cultivation so that the yields per acre will be greatly increased. That this can be done is very well demonstrated by individual farms here and by extended experience in the northwestern United States. This increased yield will release for other crops land now under wheat.

Farms should be laid out in proper units so that every acre will yield the highest possible returns. Every crop must be carefully selected and cultivated. New crops, such as corn, should be developed. More attention should be paid to live stock. In short, the risk should be spread over many different crops and as a corollary to this every marketable crop or by-product should be developed.

It is common knowledge that methods of thresh-

ing grain are not as efficient as they might be. Badly adjusted machines will cause waste, not only by losing good grain in the straw, but also by breaking kernels which frequently depreciate the value of the finished grain. This is very expensive and can be largely overcome by ordinary care.

Co-operation—What one can do for himself is the only thing of permanent value. Immediately we destroy individualism we destroy independence. With independence gone we have left only a weak community, no member of which is able to overcome the individual problems constantly occurring in his daily life. Such a situation would be particularly unfortunate among farmers because of the isolation of each individual. On the contrary, in order that each farm may be made self-dependent, which is the only way it can gain efficient results, the individualism and self-reliance of each farmer must be developed to the highest possible degree.

Individualism does not mean that every person should depend entirely on his own unaided efforts. It means quite the reverse, in that every person should secure as much assistance as possible to enable him to meet his own problems in the most effective manner as indicated by the experience of others. This is best accomplished through co-operation.

The essence of true co-operation, however, must be fully understood before permanent benefits can be derived therefrom. Its fundamental principle

is that of developing the individual through combined effort. You will notice that it does not mean getting the community to do something for the individual, but it does mean that the individual through the assistance of others puts himself in position to better perform his own work.

The co-operative movements of our farmers will be beneficial and permanent in their results as long as they stick to these fundamental principles. Immediately, however, they use their organizations to get somebody else to do things which they should do for themselves, their organizations will lose their usefulness and will become an underlying weakness in the community. It may be a rather difficult question to determine how far outside assistance should be solicited. For instance, there can be no question about the true value of educational facilities afforded by the State. This represents an intangible national benefit, the responsibility for which modern civilization has put upon the shoulders of the Government. The question, however, is entirely different when it comes to that of material aid. Probably in cases of distress it is proper to ask the Government to provide relief. There is danger even in this, however, that it may develop a class of dependents who find that if they only make their condition bad enough they can still maintain an existence at the expense of others. But where the farmer is not in distress and is merely trying to do more than he can properly accomplish with the means at his disposal, surely it is weakness to extend charity to him, for such assistance cannot be called by any other name. Where, however, the

farmers themselves co-operate to extend to each individual the combined resources of all, then the situation is reversed and each one is building up his own resources and independence by means of assisting others. This is true co-operation. It is not only desirable, but it is probably actually necessary for the continued and permanent progress of the community.

Efficiency in co-operation must be constantly borne in mind. It is manifestly absurd to attempt to do things through co-operation which are already being better or more cheaply done by other methods. Even where the results of other agencies can be equalled it is clear that it would be mere duplication for the farmers to attempt things already done for them. This is economic waste which will unnecessarily burden the community. Therefore instead of directing the objects of co-operative organizations toward commercial activities which are already being reasonably well performed and which are really outside the business of farming, it is far better for the organizations to look closely into the business of farming itself where there is ample field for their activities. It is only reasonable that the surest and most valuable results toward improving the prosperity of the farming community will be obtained by working from the inside outwards and not from the outside inwards. It seems that these organizations are going entirely outside their proper functions when they take up things only indirectly connected with farming before they master the problems, weaknesses and inefficiencies within their own business.

Even granting that there may be defects in commercial channels surrounding the farm, their correction may be reasonably left to those who know most about them and whose success depends upon the highest efficiency and lowest charges. The farmers can best apply their knowledge under exactly similar conditions, namely, to that which they know the most about and which is the business of farming.

The best co-operation is that which is personal—where each co-operator knows all of the others. This provides an effectiveness and efficiency which is unattainable in any other way. Guidance and general assistance may be given by large organizations but it is the small units with few members where true character is weighed which develop the best in every individual.

Sound business principles necessary—Waste must be eliminated. This means waste within the community as well as upon the farm. It is false economy for a farmer to hire a laborer for six months and then cast him upon the community for the other six. He has to pay for that man for a whole year just the same. It would be far better for him to devise some means to profitably keep the laborer on his farm for the entire year and thus get direct return for his expense. He must not waste his land either. He should not allow his fields to lie idle under summer fallow when he can accomplish the same purpose and incidentally raise a crop. He should not try to farm in too large units because he cannot do this efficiently. Probably one of the greatest faults

in farming in Western Canada today is the fact that almost all of our farmers are trying to cover too much territory. They have had an eye to the rise in land values rather than to the legitimate profits of farming. Whenever they could, therefore, they have invested their credit in more acres. This is economically wrong and our whole farming community is staggering under the load of too much fixed investment and too little working capital and production.

Every man of business surrounding the farmer today is performing some service for him. We have seen the high service rendered by the various elements of the grain trade. It has been entirely outside our subject to even attempt to touch upon business methods of those trades from which the farmer buys his supplies. Every one, however, is performing a useful function in our commercial structure. Every one of them is absolutely essential to the prosperity of the farmer, who is himself a cog in this big machine of commerce. He must do his part just as well and just as efficiently as each of the others or the machine will not run smoothly and the farmer will suffer along with the rest. Every line of business is a specialty and every man in every business must do his own advancing to efficiency, service and success. If he does not, competition will kill him. Business the world over is but a constant fight for the survival of the fittest. Farming is no different from the others and exactly the same conditions are necessary for success.

When our farmers will learn to apply business principles to their problem, just the same as any

manufacturer or merchant has to do; when they will consider all sides of the problem—investment, operation, purchases and sales—instead of only one element alone; when they will apply simple principles of economy and efficiency, spreading of risk, development of by-products and accumulation of liquid surplus; then, and not until then, can we truly say that we have a prosperous farming community; then, and not until then, can we truly say that our farmers have taken full advantage of the wonderful opportunities which surround them. That the chance of success is always present is demonstrated by the outstanding prosperity of a few individuals in almost every farming community. These men have never started with any unusual advantages over their neighbors. They have simply followed ordinary business principles in developing to the highest possible degree the means lying immediately at hand. They are pioneers in successful farming, and intelligent application of the same methods along the lines of sound business prudence will place the average of our entire agricultural population upon a high standard of prosperity.